

2013

School administrators' beliefs regarding the relationship between school improvements and formal school registration

Harm P. Witten
Edith Cowan University

Recommended Citation

Witten, H. P. (2013). *School administrators' beliefs regarding the relationship between school improvements and formal school registration*. Retrieved from <https://ro.ecu.edu.au/theses/872>

This Thesis is posted at Research Online.
<https://ro.ecu.edu.au/theses/872>

Theses

Theses: Doctorates and Masters

Edith Cowan University

Year 2013

School administrators' beliefs regarding
the relationship between school
improvements and formal school
registration

Harm P. Witten
Edith Cowan University, pwitten@jcsa.wa.edu.au

This paper is posted at Research Online.
<http://ro.ecu.edu.au/theses/872>

Edith Cowan University

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study.

The University does not authorize you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following:

- Copyright owners are entitled to take legal action against persons who infringe their copyright.
- A reproduction of material that is protected by copyright may be a copyright infringement. Where the reproduction of such material is done without attribution of authorship, with false attribution of authorship or the authorship is treated in a derogatory manner, this may be a breach of the author's moral rights contained in Part IX of the Copyright Act 1968 (Cth).
- Courts have the power to impose a wide range of civil and criminal sanctions for infringement of copyright, infringement of moral rights and other offences under the Copyright Act 1968 (Cth). Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

SCHOOL ADMINISTRATORS' BELIEFS REGARDING THE
RELATIONSHIP BETWEEN SCHOOL IMPROVEMENTS AND
FORMAL SCHOOL REGISTRATION

HARM PIETER WITTEN
B.A., B.Ed., M.Ed.

This thesis is presented in partial fulfilment of the requirements
for the degree of

Doctor of Philosophy

Faculty of Education and the Arts

Edith Cowan University

Date of Submission: August, 2013

Abstract

In 2004, the Government of Western Australia introduced an inspection-type formal school registration process for Non-Government (Independent) Schools, fulfilling the legislative requirement of a new School Education Act of 1999 (Part 4, Sec.159). This formal school registration process featured twelve criteria that are used to evaluate the quality of education. The government claimed that it would ensure a good education for all students in Western Australian, including those students enrolled in Independent Schools. However, very little is known about this formal school registration process, the twelve criteria used in it, or even if school administrators believe that it has helped make improvements at their schools. This study examined a new formal school registration process and investigated the beliefs of School Administrators at Non-Government (Independent) Schools in Western Australia to the relationship between formal school registration and school improvement. It considered those beliefs according to the government's twelve criteria of formal school registration: (1) Governance; (2) Financial Viability; (3) Enrolment and Attendance; (4) Number of Students; (5) Time Available for Instruction; (6) Staff; (7) School Infrastructure; (8) Curriculum; (9) Student Learning Outcomes; (10) Levels of Care; (11) Management of Disputes and Complaints; and (12) School Compliance with Written Laws. A questionnaire based on these twelve criteria was designed with five items per criterion, each answered in two perspectives (what was expected and what actually happened), and conceptually ordered from easy to hard, making an effective item sample of 120. All 150 primary and secondary non-government schools were invited to participate between 19th March 2011 and 30th November 2011, but only 110 school administrators answered the questionnaire, and only 60 (approximately 56%) completed all twelve parts of the questionnaire. Fourteen School Administrators agreed to participate in one-

on-one interviews. Two unidimensional, linear scales were created using Rasch measurement: (1) School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration (48 items); and (2) School Administrators' Beliefs That Expected School Improvements Would be Due to Formal School Registration (42 items). Items that were easy and hard were identified from the scales. Twenty-four Guttman scales were created: one for each of the twelve registration criteria by actual improvements (12 scales) and by expected improvements (12 scales). Easy and hard items were identified and they supported the Rasch scale results. The measures were analysed against seven independent variables (gender, school size, school type, school location, qualification, age and seniority). The interview data were analysed by the Miles and Huberman method in which themes or issues were created, and supported by the data. The Rasch scales, the Guttman scales, the correlation analysis and the interview data analysis produced many interesting results that are discussed and explained. School Administrators responded positively, as well as negatively, with beliefs that school improvements were due to the formal school registration process. There were differences in School Administrator beliefs in large and small schools, and in remote and metropolitan schools. The influence of school culture on school improvements due to formal school registration was highlighted by the School Administrators in non-government schools. School Administrators and Policy Officers should take note of these results.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

- (i) incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education.
- (ii) contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) contain any defamatory material.

I also grant permission for the library at Edith Cowan University to make duplicate copies of my thesis as required.

Signature:

Date:

ACKNOWLEDGEMENTS

I extend my deep appreciation and thankfulness to my Principal Supervisor Professor Russell Waugh who gave ample support, encouragement, and fast and good academic guidance throughout my candidature. I am extremely fortunate to have been given the opportunity to work with him and gain valuable insights into Rasch Measurement and Guttman Scales. I appreciated his patience while I wrote, re-wrote and re-wrote each chapter, and for his great sense of humour.

Thank you, too, to Associate Professor Jan Gray for her support, especially for the improvements to the qualitative data analysis chapters.

I acknowledge the assistance of Ms. Valerie Gould, Executive Director of the Association of Independent Schools of Western Australia, and the School Administrators of its member schools. They gave generously of their time to participate in the study through pilot tests, completing the questionnaires and by participating in one on one interviews.

My grateful thanks are extended to Dr Ken Evans, who shared the history of Western Australia's School Education Act of 1999 and to Mrs. Gill Jenkins, who was instrumental in the development of the criteria currently used during the formal school registration and shared her recollections of that time. Their cooperation greatly enhanced this study.

I also thank the parents, staff and students of the John Calvin School in Albany for their interest, support and patience while I worked to complete this project. Most appreciated!

I am forever grateful to my supportive, loving and understanding wife, Margaret Jane, who unselfishly made time for me to complete this research. Last, but not least, I thank God for giving me the strength and courage to complete this thesis.

LIST OF PUBLICATIONS

Witten, H., Waugh, R. & Gray, J. (2012). *School administrators' beliefs that actual school improvements were due to formal school registration*. Refereed full-paper presented at the Pacific Rim Objective Measurement Symposium, Jiaxing, China, on 8th August, 2012 and approved for inclusion in the Conference Proceedings.

Witten, H., Waugh, R. & Gray, J. (2012). *School administrators' beliefs that actual school improvements were due to formal school registration: Guttman scales and their inter-correlations*. Refereed full-paper presented at the AARE-APERA Conference held in Sydney, Australia on 4th December and included in Conference Proceedings, available at <http://www.aare.edu.au/pages/static/conference.aspx?y=2012>

Witten, H., Waugh, R. & Gray, J. (2012). *School administrators' beliefs that actual school improvements were due to formal school registration: A Rasch measurement*. Refereed full-paper presented at the AARE-APERA Conference held in Sydney, Australia on 4th December and included in Conference Proceedings, available at <http://www.aare.edu.au/pages/static/conference.aspx?y=2012>

TABLE OF CONTENTS

Title Page	i
Use of Thesis	ii
Abstract	iv
Declaration	v
Acknowledgements	vi
List of Publications	vii
List of Contents	viii
List of Tables	xiv
List of Figures	xviii
List of Appendices	xix
 Chapter One: Introduction	 1
The Education System in Western Australia	2
School Curriculum in Western Australia	4
Sector Schools in Western Australia	5
School Registration in Western Australia: 1846 to 2001	7
The New School Education Act of 1999	10
Incorporation of Learning Outcomes in School Registration	11
The New Process of Formal School Registration	13
Formal School Registration Criteria	15
The Twelve Formal School Registration Criteria	16
The Association of Independent Schools of Western Australia (AISWA)	18
Research Questions	19
Significance of this Study	20
Limitations of this Study	21
Definition of Terms	22
Overview of this Study	23
 Chapter Two: Literature Review	 27
The Historical Context of Twelve Criteria used in School Registration	28
School Registration Criteria in Three Educational Jurisdictions	32
School Registration Criteria in Tasmania	32

School Registration Criteria in New Zealand	34
School Registration Criteria in the UK	37
The Role of School Administrators in Formal School Registration	41
Comparative Studies of School Evaluation in Europe	43
Additional Studies on Formal School Registration	45
Summary of Observations	49
 Chapter Three: Conceptual Framework	 52
Change and Formal School Registration	53
Accountability and School Registration	54
The Twelve Criteria and Standards	56
Two Conditions Describing Inter-Relationships between Twelve Criteria	60
An Inter-Relationship between Care for the Students and Disputes & Complaints	61
An Inter-relationship between School Governance and School Staff	63
The Influence of Context Variables on formal School Registration	64
School Size	65
An Explanation of the Study Questionnaire	68
School Administrators' Beliefs that Actual and Expected School Improvements Were Due to Formal School Registration	72
An Explanation of Study Interviews	77
Questions to be Answered	78
 Chapter Four: Measurement	 80
Measurement Theory	80
True Score Theory	81
Linear Measurement Required (1)	82
Easy to Hard Order of Items Required (2)	82
Easy to Hard Order of Responses Required (3)	83
Summary of Requirements for Measurement	85
Rasch Measurement Model	85
Simple Logistic Model (SLM) of Rasch Measurement	86
Equations for the Simple Logistic Model of Rasch	87
Equations for the Extended Logistic Model of Rasch	88

RUMM 2030 Computer Program	89
(1) Testing for Consistent and Logical Answers to the Response Categories	89
(2) Testing for Dimensionality	89
(3) Testing for Good Global Item-Person Fit Statistics	90
(4) Person Separation Index	90
(5) Testing for Good Individual Item and Person Residuals	90
(6) Item Characteristic Curves	91
(7) Person Measure/Item Difficulty Map	91
Guttman Scales	92
 Chapter Five: Research Design and Methodology	 95
Research Design	95
Mixed Method Research	96
Administrative and Ethical Approvals	98
Data Collection, Population and Samples	100
Study Questionnaire and Pilot Testing	100
Interviews and Pilot Testing	104
Study Population and Samples	105
School Questionnaire Sample (N=110/150)	108
Interview Sample (N=14)	110
Data Collection	110
Collection of Study Questionnaire Data	111
Collection of Study Interview Data	112
Data Analysis	113
Rasch Measurement	113
Guttman Scales	114
Interviews	114
 Chapter Six: Data Analysis (Part 1) - Rasch Measurement School Administrators' Beliefs That Actual School Improvements Were Due To Formal School Registration	 116
Initial Rasch Analysis	117
Final Analysis-Summary of Fit Statistics	119

Individual Item- Fit	121
Item Threshold Distribution	123
Item Characteristic Curve	125
Response Category Curves	125
Person-Item Threshold Distribution (Targeting)	127
Good Fitting Items	130
Summary	133
 Chapter Seven: Data Analysis (Part 2) - Rasch Measurement School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	136
 The Initial Rasch Analysis (N=60, I=47)	137
Final Rasch Analysis	139
Summary of Fit Statistics	140
Individual Item- Fit	141
Item Threshold Distribution	142
Item Characteristic Curve	143
Response Category Curves	144
Person-Item Threshold Distribution (Targeting)	146
Good Fitting Items	149
Summary	152
 Chapter Eight: Data Analysis (Part 3) – Guttman Scales (Actual Improvements) and their Inter-Correlations	155
 Guttman Scales for Actual Improvements	156
Zero-Order Inter-Correlations	161
Summary of Main Findings	172
 Chapter Nine: Data Analysis (Part 4) – Guttman Scales (Expected Improvements) and Their Inter-Correlations	175
 Guttman Scales for Expected Improvements	176
Zero-Order Inter-Correlations	181
Summary of Main Findings	192

Chapter Ten: Data Analysis (Part 5) – Cross Tabulations of Guttman Scales (Actual Improvements) and the Context Variables	195
Cross-Tabulations: Guttman Scales and Context Variables	196
School Location and School Governance	197
School Size and School Staff	201
School Type and Student Learning Outcomes	203
School Type and Disputes & Complaints	205
School Position and School Curriculum	207
Cross-Tabulations of Guttman Scales: Hardest Item to Improve and Context Variables	209
School Location and Item 6: The School Council’s Community and Public Relations	209
School Size and Item 114: Staff Training on Matters Dealing with Legal Requirements	212
School Administrator Gender and Item 100: The School’s Pastoral Care Program	213
Summary of Main Findings	214
Chapter Eleven: Data Analysis (Part 6) – School Administrator Interviews	217
Factors Affecting School Registration	218
School Improvements Derived from School Registration	221
Improvements to the Formal School Registration Process	223
Registration Criteria	226
An Internal Review Option	226
Registration Officer Selection	227
Problems in School Registration	229
Important Criteria	231
Care for Students	232
School Registration Recommendations	234
Summary	235
Chapter Twelve: Data Analysis (Part 7) – School Administrator Comments	238
School Governance	239
School Financial Viability	241

School Enrolment and Attendance	242
Number of Students	244
Instructional Time	244
School Staff	246
School Infrastructure	247
School Curriculum	248
Student Learning Outcomes	250
Level of Care for Students	251
Legal Compliance	252
Summary	253
 Chapter Thirteen: Summary, Discussion and Implications	 258
Summary of the Study	258
Answering the Research Questions	261
Research Question 1	261
Research Question 2	263
Research Question 3	265
Research Question 4	267
Research Question 5	269
Research Question 6	273
Research Question 7	273
Discussion	275
Implications for School Administrators	282
Implications for Registration Officers	283
Implications for the Department of Educational Services	284
Implications for Future Research	285
Conclusion	286
References	288

TABLE OF TABLES

Table	Page
3.1 Legislated Requirements for Non-Government School Registration	58
3.2 Easy to Hard Items on Instructional Time (Criterion Five)	69
3.3 School Governance Questionnaire	71
3.4 Predicted Order of School Improvement Item Difficulties for Student Learning Outcomes (9)	74
3.5 Predicted Order of School Improvement Item Difficulties for Care of Students	75
4.1 Perfect Guttman Pattern Showing Four Perspectives (1,2,3,4) for Five Items	93
5.1 Twelve Criteria and Sixty Items used in the Study Questionnaire	102
5.2 AISWA Member School Enrolments	106
5.3 AISWA Member Schools	107
5.4 AISWA School Type and School Location	108
5.5 School Sample for Study Questionnaire	109
6.1 Twelve Non-Fitting Items for School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	119
6.2 Summary Statistics of the Rasch-Created Linear Scale of School Administrators' Beliefs, That Actual School Improvements Were Due to Formal School Registration	121
6.3 Item Difficulties (Locations), Standard Errors (SE), Residuals and Fit to the Measurement for the Linear Scale of School Administrators' Beliefs, That Actual School Improvements Were due to Formal School Registration	122
6.4 Un-Centralised Item Thresholds for the Linear Scale of School Administrators' Beliefs, That Actual School Improvements Were Due to Formal School Registration	124
6.5 A Rasch-Created Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration (This is a block of the easiest items in difficulty order)	131
6.6 A Rasch-Created Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration (This is a block of the hardest items on the same scale as the more easy items)	132
7.1 Thirteen Non-Fitting Items for School Administrators' Beliefs	138

	That Expected School Improvements Would Occur Due to Formal School Registration	
7.2	Summary Statistics of the Rasch-Created Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	139
7.3	Item Difficulties (Locations), Standard Errors (SE), Residuals And Fit to the Measurement for the Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	140
7.4	Un-Centralised Item Thresholds for the Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	142
7.5	A Rasch-Created Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	149
7.6	A Rasch-Created Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration (This is a block of the hardest items on the same scale as the more easy items)	151
8.1	Guttman Scale Scores – School Governance (N=73)	158
8.2	Guttman Scale Scores – Disputes and Complaints (N=65)	160
8.3	Correlations Between Criteria 1 and 6 of School Registration Causing Actual School Improvement (N=59)	162
8.4	Correlation Matrix for Criteria 7 and 8 Versus Criteria 1,2,3,4,5,6 and 7 of School Registration Causing Actual School Improvement (N=59)	163
8.5	Correlation Matrix for Criteria 9 and 10 Versus Criteria 1,2,3,4,5,6,7,8 and 9 of School Registration Causing Actual School Improvement (N=59)	165
8.6	Correlation Matrix for Criterion 11 Versus Criteria 1,2,3,4,5,6,7,8,9 and 10 of School Registration Causing Actual School Improvement (N=59)	168
8.7	Correlation Matrix for Criterion 12 Versus Criteria 1,2,3,4,5,6,7,8,9,10 and 11 of School Registration Causing Actual School Improvement (N=59)	170
9.1	Guttman Scale Scores – School Governance (N=74)	178
9.2	Guttman Scale Scores – School Financial Viability (N=65)	180
9.3	Correlations Between Criteria 1 and 6 of School Registration Causing Expected (Exp.) School Improvement (N=59)	182
9.4	Correlation Matrix for Criteria 7 and 8 Criteria Aspects 1,2,3,4,5,6 and 7 of School Registration Causing Expected (Exp.) School Improvement (N=59)	183

9.5	Correlation Matrix for Criteria 9 and 10 Versus Criteria 1,2,3,4,5,6,7,8 and 9 of School Registration Causing Expected (Exp.) School Improvement (N=59)	185
9.6	Correlation Matrix for Aspects 11 Versus Aspects 1,2,3,4,5,6,7,8,9 and 10 of School Registration Causing Expected School Improvement (N=59)	188
9.7	Correlation Matrix for Criteria 12 Versus Criteria 1,2,3,4,5,6,7,8,9,10 and 11 of School Registration Causing Expected School Improvement (N=59)	190
10.1	Cross-Tabulation of School Location and Criterion 1 (School Governance) of School Registration Causing Actual School Improvement (N=64)	198
10.2	Cross-Tabulation of School Location and Criterion 2 (School Finance) of School Registration Causing Actual School Improvement (N=64)	200
10.3	Cross-Tabulation of School Size and Aspect 6 (School Staff) of School Registration Causing Actual School Improvement (N=63)	202
10.4	Cross-Tabulation of School Size and Criterion 12 (Legal Compliance) of School Registration Causing Actual School Improvement (N=63)	203
10.5	Cross-Tabulation of School Type and Criterion 9 (Student Learning Outcomes) of School Registration Causing Actual School Improvement (N=57)	204
10.6	Cross-Tabulation of School Type and Criteria 11 (Disputes & Complaints) of School Registration Causing Actual School Improvement (N=57)	205
10.7	Cross-Tabulation of School Administrator Gender and Criteria 10; (Care for Students) of School Registration Causing Actual School Improvement (N=65)	207
10.8	Cross-Tabulation of School Position and Criteria 8; School Curriculum of School Registration Causing Actual School Improvement (N=57)	208
10.9	Cross-Tabulation of School Location and Item 6; The School Council's Community and Public Relations (N=64)	210
10.10	Cross-Tabulation of School Type and Item 58; Improvement in Morale and Professionalism of Staff at School (N=64)	211
10.11	Cross-Tabulation of School Size and Item 114; Staff Training on Matters dealing with Legal Requirements (N=62)	212

10.12	Cross-Tabulation of School Administrator Gender and Item 100; The School's Pastoral Care Program (N=64)	213
13.1	Twelve re-worded items for School Administrators' Beliefs that Actual School Improvements Were Due to Formal School Registration	263
13.2	Thirteen non-fitting items for School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	265
13.3	Five Moderately Hard Items of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	270
13.4	Five Very Hard Items of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	270
13.5	Five Moderately Hard Items of School Administrators' Beliefs That Expected School Improvements Were Due to Formal School Registration	271
13.6	Five Very Hard Items of School Administrators' Beliefs That Expected School Improvements Were Due to Formal School Registration	270
13.7	A Guttman Scale Order for Five Items of School Administrators' Beliefs That Actual School Improvements in School Financial Viability (Criterion 2) Were Due to Formal School Registration	271

TABLE OF FIGURES

Figures	Page
1.1 School Inspection Report 1962	9
3.1 Model for the Study of School Administrator Beliefs Regarding School Registration Criteria	60
5.1 Study Procedure Model for Data Collection	111
6.1 Item Characteristic Curve for Item 10 of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	125
6.2 Response Category Curve for Item 6 of School administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	127
6.3 Target Graph by Gender of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	128
6.4 Target Graph by School Size of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	128
6.5 Target Graph by Location of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	129
6.6 Target Graph by School Type of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration	129
7.1 Item Characteristic Curve for Item 11 of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	144
7.2 Response Category Curve for Item 5 of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	145
7.3 Target Graph by Gender of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	147
7.4 Target Graph by Location of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration	147
7.5 Target Graph by School Size of School Administrators' Belief That Expected School Improvements Would Occur Due to Formal School Registration	148
7.6 Target Graph by School Type of School Administrators' Beliefs	148

LIST OF APPENDICES

A	Study Cover Letter	315
B	Consent Letter	316
C	Pilot Questionnaire Questions	317
D	Journal Entry – Mrs. Jill Jenkins	318
E	Journal Entry – Mr. Bronte Parkin	319
F	Journal Entry – Dr. Ken Evans	320
G	Journal Entry – Mr. Edward Simons	321
H	Study Questionnaire	322
I	Guttman Scale Scores: School Finance	330
J	Guttman Scale Scores: Enrolment & Attendance	331
K	Guttman Scale Scores: Number of Students	332
L	Guttman Scale Scores: Instructional Time	333
M	Guttman Scale Scores: School Staff	334
N	Guttman Scale Scores: School Infrastructure	335
O	Guttman Scale Scores: School Curriculum	336
P	Guttman Scale Scores: Student Learning Outcome	337
Q	Guttman Scale Scores: Level of Care for Students	338
R	Guttman Scale Scores: Disputes and Complaints	339
S	Guttman Scale Scores: Legal Compliance	340

CHAPTER ONE

INTRODUCTION

In 2004, the Government of Western Australia introduced a new inspection-type formal registration process for Non-Government (Independent) Schools, fulfilling the legislative requirement of a new School Education Act of 1999 (Part 4, Sec.159). This formal school registration process featured twelve criteria that are used to evaluate the quality of education. The government claimed that this was necessary to ensure a good education for all students in Western Australian, including those students enrolled in Independent Schools (Barnett, 1997). Registration panels were formed to review the independent schools and complete the new formal school registration process. However, nine years later, very little is yet known about this formal school registration process, the twelve criteria used in it and whether or not school administrations believe that it has helped make improvements at their schools (Constable, 2010). There are no published research data from Western Australia in relation to this issue and the Department of Education Services in Western Australia has not authorised any research on it. In response to this situation, the present study investigates the beliefs of School Administrators at Non-Government (Independent) Schools in Western Australia to the relationship between school registration and school improvement. The study considers those beliefs to the following twelve criteria of formal school registration in relation to school improvements; (1) Governance; (2) Financial Viability; (3) Enrolment and Attendance; (4) Number of Students; (5) Time Available for Instruction; (6) Staff; (7) School Infrastructure; (8) Curriculum; (9) Student Learning Outcomes; (10) Levels of Care; (11) Management of Disputes and Complaints; and (12) School Compliance with Written Laws, when placed within the context of differences in seven independent

variables (gender, school size, school type, school location, qualification, age and seniority).

This introductory chapter begins with a brief outline of the education system in Western Australia and then describes the events which have led to the introduction of a new formal school registration process for non-government schools in Western Australia. It also outlines the legislative basis, process and the formal registration criteria for the registration of independent schools. *(This study will not include those non-government schools which are currently registering to become an independent school or those schools that are already a part of a systemic non-government school programme, such as Catholic schools which are registered through the Catholic Education Office.)* The chapter continues with the research questions and the researcher then highlights the significance of this study and its limitations. Finally, this chapter introduces the reader to the thesis by presenting an overview of the study.

The Education System in Western Australia

Education in Western Australia is controlled by the Minister of Education, who is a member of the Government of Western Australia. The Minister manages the Department of Education, which supervises state or public education and the Department of Education Services, which supervises all non-government education. Schooling is divided into three sections, starting with primary education (primary schools), followed by secondary education (secondary schools or secondary colleges) and tertiary education (Universities and Technical and Further Education Colleges).

Primary education usually begins with two preparatory years, commonly known as the 'kindergarten' and 'pre-primary' years of schooling. These school years serve as

an introduction to schooling. Formal learning in primary schools begins in Year One (6 years old) and concludes in Year Seven (12 years old). (*Late 2011, the WA Minister of Education announced that starting in 2013, Year Seven would no longer be considered to be part of a student's primary education.*) (Department of Education, 2011).

Secondary education consists of Years Eight (13 years old) to Twelve (17 years old).

Most secondary schools are generally separate institutions to primary schools. There

are five universities in Western Australia; Edith Cowan University, Murdoch

University, Curtin University, the University of Notre Dame and the University of

Western Australia. The University of Notre Dame is the state's only private university

(Department of Education Services, 2010).

Education is compulsory in Western Australia for all children between the ages of six and seventeen. The enrolment of five year olds in pre-primary education is voluntary. (*Late 2011, the Minister of Education announced that beginning 2013, pre-primary education will be compulsory for all five year olds.*) (Government of Western Australia, 2011) The normal school year for primary and secondary schools is divided into four - ten week school terms, which run from late January until mid-December. A standard week of schooling totals approximately twenty five hours of instructional time. Students enrolled in University or Technical Colleges begin their school year in mid-February and finish in mid-November. Students seeking admission into a university are required to sit a Tertiary Entrance Exam during their twelfth year of schooling. The result of that exam is used to determine a student's Tertiary Entrance Rank and Tertiary Entrance Score, which may determine a student's eligibility for tertiary study. Students having higher level Technical College certificates or/and mature aged students can also at times, depending on previous experiences, gain access to some university programs.

School Curriculum in Western Australia

The curriculum in Western Australian primary and secondary schools is determined by the Curriculum Council (*In 2013, the Government created a new agency, School Curriculum and Standards Authority, to supervise the curriculum.*) (www.scsa.wa.edu.au, 2012). This agency which is responsible for the policy direction and development of curriculum also accredits courses for senior secondary schooling and provides for the assessment and certification of student achievement. The Curriculum Council is an independent statutory authority that is responsible to the Minister for Education. It is administered by a board consisting of 13 members representing the Department of Education, the Western Australia Association of Independent Schools, the Catholic Education Office, universities, the training sector, teachers, industry and the community. (www.curriculum.wa.edu.au, 2010).

Curriculum for students in years 1 to 10 has since 1998 been outlined in the *Curriculum Framework* that spells out the ‘knowledge, understanding, skills, values and attitudes that students are expected to acquire’ (www.curriculum.wa.edu.au, 2010). The curriculum for secondary students in years 11 and 12 is outlined within the Western Australian Certificate of Education program. Curriculum requirements as contained within the Curriculum Framework are described as a series of learning outcomes. Thirteen overarching learning outcomes, describing basic learning needs and abilities, are linked to the learning outcome statements for the following eight learning areas; Arts, English, Health & PE, Languages other than English, Mathematics, Science, Society and Environment, and Technology and Enterprise Education.

On the 18th June, 2009, Western Australia agreed to cooperate with all other Australian States and Territories, as publicised through the Melbourne Declaration on

Educational Goals for Young Australians, to develop and implement a new ‘national’ Australian Curriculum for all students in primary and secondary education (www.acara.edu.au, 2010). The challenge to achieve a nation-wide curriculum led to the formation of the Australian Curriculum, Assessment and Reporting Authority (ACARA).

In January 2010, the Australian Curriculum, Assessment and Reporting Authority published online a scope and sequence curriculum for English, Math, History and Science. A timetable was also set to eventually address all eight learning areas. The new Australian Curriculum is content specific, sequenced by year groups and compulsory for all students. Within each year group the Australian Curriculum outlines precisely what a student will learn. A selected example for the year pre-primary and year three Math learning area reads as follows; Pre-primary – Counting “Say, understand and reason with number sequences, initially to and from 20, and then beyond, moving to any starting point.” Year Three – Counting “Understand and reason with number sequences increasing and decreasing by twos, fives and tens from any starting point, moving to other sequences, emphasizing patterns and explaining relationships (www.acara.edu.au, 2010).” It would be safe to say that curriculum in Western Australia has encountered much change and will continue to influence each school sector in Western Australia. What follows is a brief description of the sector schools currently present in Western Australia.

Sector Schools in Western Australia

Western Australia’s education system includes government (public) and non-government (private) sector schools, also known as independent schools. In Western Australia there are about just under 800 government schools and approximately 300

independent schools ranging anywhere from a small community based school to large urban secondary schools and colleges. Approximately 66 per cent of students attend government schools and 34 per cent attend independent schools (Department of Education Services, 2010). Within the independent school sector there are Catholic schools run by the Catholic Education Office, (approximately 18%) and independent schools (approx.16%) which are operated by School Councils that may adhere to certain religious beliefs , such as Protestant, Jewish, Islamic or non-denominational schools and secular educational philosophies such as Montessori or Steiner (Association of Independent Schools of Western Australia, 2010).

The School Education Act of 1999, which governs all aspects of education in West Australia, including the policies and procedures for the registration of non-government schools, recognises a division between non-government schools that belong to a group of registered schools, such the Catholic Education Commission, (*known as 'system schools', see the School Education Act 1999, Part 4*) and those schools that do not belong to a recognised group of schools. Most 'non-system' schools are members of the Association of Independent Schools of Western Australia. This incorporated body advises the Government of Western Australia on non-government school matters and administers the State and Commonwealth funding to non-government schools. The registration of non-government schools, in accordance with the School Education Act of 1999 and School Education Regulations 2000, is intended to ensure that all schools meet minimum acceptable education standards (DES, 2010).

Whilst education in Western Australian primary and secondary government schools is free for Australian citizens, Catholic and Independent schools do charge a fee for student enrolment. In some cases, such fees can be high and prohibitive for parents

with a modest income. This disparity in educational choice for parents, based on parent affordability, fosters criticism of the Western Australia's education system (Kirby, 2012). The government's earlier recognition and registration of non-government schools provides a further insight into the current registration process. This is what follows next.

School Registration in Western Australia: 1846 to 2001

The earliest reference to school registration in Western Australia can be found in a Government Gazette which was published in the Perth Gazette, on the 19th of June 1846 (National Library of Australia, 2011). Reference to school registration was made in a set of rules and regulations which the Colonial Secretary had issued to all colonial schools. One of the rules stated that each school principal would be required to register with the government, and to seek its approval, prior to the implementation of an education program (Mossenson, 1972). However, although there were a number of non-government schools in existence at the time, the government did not demand that they be registered (Rankin, 1926).

The suggestion that non-government schools should be registered with the government appears for the first time in a government commission report written in 1893. This commission, which had investigated the decline of student enrolment in government schools, questioned the competency of private schools (Mossenson, 1972). The report pointed out that some private schools were staffed by unqualified teachers and that irregular student attendance was tolerated. By recommending that non-government schools be registered, the government sought to increase its control of education and improve school conditions. Much of the government's control of education was achieved through school visits by school inspectors, who were appointed

by the government to ensure that a high standard of education be maintained (Rankin, 1926).

The registration of non-government schools in Western Australia was legislated for the first time within the Education Act of 1928, Section 32A, which refers to non-government schools as being ‘efficient schools’ and states the following.

The proprietor, headmaster or principal teacher of any school which provides instruction up to and including the final year of secondary education, shall apply to the Minister, within one month from the commencement of or the establishment of the school, to have the school registered in the register of efficient schools kept in the department for the purpose the [Education Act](#) , (Government of Western Australia, 1928).

The subsequent subsections of the Education Act 1928; Sect. 32B, 33 and 34 prescribed the legal obligations imposed by the government on a non-government school which has been registered. For example, non-government schools were required to report on the daily attendance of students at school (Government of Western Australia, 1928).

During the next five decades (1928-1978) the process of non-government school registration remained relatively unchanged. A registered non-government school would remain registered and would normally be inspected on an annual basis, the report of which was filed with the Western Australia Department of Education. The inspection reports were general and usually provided a few suggestions on how the registered non-government school could improve. Figure 1.1 features an ‘Inspection Report’ of a non-government school. What follows after Figure 1.1 is a brief description of the new School Education Act 1999 and how it contributed to the introduction of a new non-government formal school registration process. The impact of two educational factors; an agreement on National Goals for Australian schools and the implementation of Western Australia’s Curriculum Framework, will also be reviewed.

Figure 1.1 Inspection Report Example 1962

INSPECTION REPORT.

I . R . 1

HEADTEACHER ;

Please copy this Report for your School file, certify as below, and forward it at once to the Department.

20_11 - 1962 A. Chapple Superintendent.

An exact copy of this Report has been made and retained in this School.

21-11-1962 G . M . Spijker Head Teacher.

WESTERN AUSTRALIA .

E D U C A T I O N D E P A R T M E N T .

Free Reformed Church School Inspection 20 - 11 - 1962 .
Albany.

Name of Teacher.	Rank.	Months in charge of present class.	STAFF, Etc.			Enrolment.			Present.			Grade.	Average age at end qua.	
			B.	G.	Total	B.	G.	Total	Y.	M.				
Spijker , Geert.	H	6	5	4	9	5	4	9	7	12	7			
			2	3	5	2	2	4	6	11	5			
			2	1	3	2	1	3	5	10	6			
			1	2	3	1	2	3	4	9	6			
Douw , Corrie.		3	7	4	11	7	4	11	3	8	8			
			2	5	7	2	4	6	2	7	5			
			5	4	9	5	4	9	1	6	6			
T O T A L S .			24	23	47	24	21	45	7					

<p>Adequacy of Accomodation and Condition of Buildings and Grounds.</p> <p>Accomodation : Adequate</p> <p>Buildings : Very good condition</p> <p>Grounds : Adequate , kept tidy</p>	<ol style="list-style-type: none"> 1. School Records : Correct 2. Libraries : Yet to be built up 3. Time Tables : Satisfactory 4. Programmes : To be planned more fully 5. Terminal Examinations : !!
---	--

(Figure 1: Printed with Permission – Albany, 2010)

The New School Education Act of 1999

A Brief History

Work on Western Australia's new School Education Act 1999 began in the 1970's. It was the opinion of the government that the previous Education Act of 1928, lacked clarity and the Education Department struggled to cope with a changing educational situation (Hansard, 1998). The Government commissioned Dr. Bill Woods, the Deputy Director General of the Education Department, to rewrite the Education Act of 1928. Even though Dr. Woods did review the Education Act of 1928, his efforts, and that of others who would follow him, remained unsuccessful. It wasn't until some seventy years later, when the Hon. Norman Moore, Minister of Education, who was himself a former teacher, that a reference team was formed under the leadership of Dr. Ken Evans and the new draft School Education Act of 1999 was written. The draft School Education Act of 1999, was introduced as a Green Bill and would finally be enacted into law on the 12th of July 2001 (Hansard, 1998).

Part Four of the new School Education Act of 1999, which deals with non-government schools, stipulates that non-government schools must be registered by the Minister of Education (School Education Act of 1999, Sec. 159). Although the previous Act of 1928 had the same basic requirement, the School Education Act of 1999 also outlines the standards which must be maintained for the registration of a non-government school. Rather than being registered only once with the Government, the governing bodies of schools must periodically apply for the renewal of registration and demonstrate that they continue to have policies and procedures in place that will enable them to meet the requirements of the *School Education Act of 1999* and the *School Education Regulations 2000*. All registered schools, are required to provide a safe and

supportive environment as well as learning programs that meet agreed learning outcomes for all students in Western Australia (Department of Education Services, 2010). Those agreed learning outcomes will now be briefly described.

Incorporation of Learning Outcomes in School Registration

During the late 1980's, there was a move towards the development of national goals for Australian schools. The State, Territory and Commonwealth Ministers of Education met as the 60th Australian Education Council in Hobart, 14-16 April 1989 and agreed to collaborate on the development of National Goals for Schooling (Ministerial Council for Education, Early Childhood Development and Youth Affairs, 1989). Ten years later, the same Council would issue the *Adelaide Declaration on National Goals for Schooling in the Twenty-First Century* to outline a set of commonly agreed goals and *Statements and Profiles* dealing with eight key learning areas. After this development work was completed in 1993, each State and Territory agreed to use the *National Statements and Profiles* as a basis for further curriculum development within its own context. In Western Australia, a modified version of the Profiles, the *Student Outcome Statements Working Edition*, was trialled in 1994 and 1995 (Department of Education Services, 1998).

In 1997, the Western Australia government passed the *Curriculum Council Act 1997*, charging this agency with the mandate, "To set curriculum policy directions for Kindergarten to Year 12 schooling in Western Australia" (DES, 1997). One year later, the Curriculum Council published the *Curriculum Framework* aimed at setting out what all students should know, understand, value and be able to do as a result of programs they undertake in schools in Western Australia (DES, 1998). The *Curriculum Framework* introduced a shift to Outcomes Based Education which was promoted as

enabling teachers to shape the educational process to suit the needs of the students (Andrich, 2009). There were no off-the-shelf guides to assist teachers to implementing the learning outcomes set out in the *Curriculum Framework*. Education activists and academics critiqued West Australia's *Curriculum Framework* and the adoption of Outcomes Based Education on the basis that it does not represent 'world's best' curriculum and that it fails to successfully support teachers in their work (Griffin, 1996).

Support for the implementation of the new student learning outcomes as described in the *Curriculum Framework* was realised within the Non-Government Schools in three ways. Although these measures were not specifically addressed to Western Australia's Non-Government Schools, their impact soon became apparent. First, prior to the implementation targeted date in 2004 and subsequently until 2007, every Non-Government Schools was mandated to complete and submit an annual '*Curriculum Framework Implementation Survey*'. Via the collection of this survey data, the Curriculum Council was able to monitor the progress achieved by each school toward the successful implementation of the *Curriculum Framework*. Second, in 1998 the Government of Western Australia initiated an annual assessment program of all Year 3, 5, 7 and 9 students in both literacy and numeracy, known as the *Western Australian Literacy and Numeracy Assessment* (Department of Education Services, 1998). Student test results from the Western Australian Numeracy and Literacy Assessment program (WALNA) would now be used or viewed as a measurement of educational effectiveness in terms of the student learning outcomes listed in the *Curriculum Framework* (Curriculum Council of Western Australia, 1998). Third, the Government of Western Australia passed a new *School Education Act 1999* making provision for the registration and inspection of non-government schools. A new Education Act was deemed necessary since the old 1928 Act had been subjected to numerous amendments and

other regulations issued to support it. In accordance with Part 4 of the *School Education Act*, since 2004, all non-government schools in Western Australia were formally registered to ensure that the students enrolled in those schools have attained the student learning outcomes, as described in the *Curriculum Framework*, and as tested through the WALNA assessment program.

Although in 2008 the Western Australia Literacy and Numeracy Assessment (WALNA) program was replaced by a National Assessment Program for Literacy and Numeracy (NAPLAN) and a new draft Australian Curriculum (ACARA, 2010) is set to replace the Curriculum Framework, the legislative basis for School Registration has not changed. Likewise, as highlighted by Williams (Williams, 2000, p.53) the new legislation (*School Education Act 1999*), has replaced the focus on physical attendance at school with attention to the student's enrolment in an educational program. What follows is a description of the process for Western Australia's formal school registration renewal.

The New Process of Formal School Registration

The process of formal school registration for non-government schools in Western Australia can be described as a 'one-size-fits-all', legislative compliance or regulatory process. There are no exemptions, provisions or special allowances present within the regulations governing the formal school registration process. In addition, the process is primarily a 'tick-the-box' procedure wherein School Administrators demonstrate that the requirements of formal school registration have been met. Officially, formal school registration concerns the following seven audit and reporting requirements (www.des.gov.wa.au, 2010):

1. The governing body of the school applying for registration must submit documentary evidence in the school registration application form;
2. The Western Australia Department of Education Services contracts a panel of consultants to conduct the registration process;
3. The selected panel completes a desktop audit of the documents provided by the school against the assessment criteria;
4. Evidence assessed through the desktop audit is complemented by observations made during a school visit;
5. The panel analyses the information gathered in relation to the aspects or criteria to make an on-balance judgement on whether the school complies with each of the legislated registration requirements;
6. A report is prepared for the Minister of Education by the panel. It includes recommendations to the Minister about the degree to which the school meets the legislated registration requirements and about the period for future registration; and
7. The Minister of Education considers the report and, if satisfied, the school meets the registration requirements issues a Certificate of Registration.

The following generalised point description serves to further contextualise the above more formal seven steps which were taken from the *School Education Act 1999*, *Part 4 – Non-Government Schools*.

- a) The registration process is managed by the Department of Education Services via the *Office of Non-Government Schools* subdivision.
- b) The official registration process is initiated by a letter from the Office of Non-Government Schools requesting the documentary evidence listed as required in the re-registration application.

- c) The required documentary evidence, which may be submitted in hard copy or electronically, must be available for a desktop audit at least two weeks prior to the school visit by a panel of consultants.
- d) The number of consultants visiting a school and length of their visit is generally dependent upon the school size, e.g. two consultants / one day / 200 students.
- e) Schools which were deemed to be highly successful in meeting the required standards for re-registration were given a seven year registration period. Since 2009, that maximum registration renewal period for such schools has been reduced to five years.
- f) Schools which struggle or fail to meet the required standards of registration may receive a shorter renewed registration period and will be instructed to improve their situation.
- g) The exact period or length of registration is dependent upon the recommendation of the Office of Non-Government Schools and the judgement or final decision made by the Minister of Education.

What follows is a description of the criteria used in formal school registration.

Formal School Registration Criteria

When a non-government school applies for a formal school registration, twelve criteria are reviewed. They are: (1) Governance; (2) Financial Viability; (3) Enrolment and Attendance; (4) Number of Students; (5) Time Available for Instruction; (6) Staff; (7) School Infrastructure; (8) Curriculum; (9) Student Learning Outcomes; (10) Levels of Care; (11) Management of Disputes and Complaints; and (12) School Compliance with Written Laws. Whilst each criterion is uniquely essential, it is the collective intent

of these criteria to assist schools aiming to maintain and improve the quality of education for students (Earl, 2000).

The Twelve Formal School Registration Criteria

Governance

Governance refers to the supervisory actions taken by the school “governing body”, in an open and transparent manner, to maintain a minimum standard of education, and to ensure the safety and welfare of students and legal compliance [*School Education Act 1999, Section s150 (b)*] .

Financial Viability

Financial viability refers to the school’s financial resource sufficiency to provide a satisfactory standard of education of the kind for which it is registered. The school must be able to ensure that the operation of the school and its long-term viability are maintained for the benefit of its students [*School Education Act 1999, Section s159 (1)(l)*].

Enrolment and Attendance

Enrolment and attendance refers to the school policies and procedures to admit students and monitor school attendance. Schools must ensure that a school’s enrolment and attendance practices comply with the requirements of the following legislation:

School Education Act 1999 (Part 2) and School Education Regulations 2000 (Part 2);
Curriculum Council Act 1997 and Regulations 2005;
Equal Opportunity Act 1984;
Disability Discrimination Act 1992 and the Disability Standards for Education 2005;
Racial Discrimination Act 1975; and
Sex Discrimination Act 1984.

Number of Students

Number of students refers to the number of students attending a school in the year levels for which the school is seeking registration, in order to ensure that these numbers

will sufficiently maintain the school's financial and educational viability. Class sizes must be appropriate to meet the student's educational and supervision needs [*School Education Act 1999, Section s159 (1)(c) and (h)*].

Time available for Instruction

Time available for instruction refers to the total time in hours and number of days that a non-government school must allocate for instruction throughout the school year. The time set for instruction must match the time available for instruction within government schools. [*School Education Act 1999, Section s159 (1)(d)* & *School Education Regulations 2000, r129*].

Staff

Staff refers to all teachers who must be registered members of the Western Australian College of Teaching, and non-teaching staff. Each staff member must also meet the requirements of the Working With Children (Criminal Record Checking) Act 2004 [*School Education Act 1999, Section s159 (1)(e)*].

School Infrastructure

School infrastructure refers to the school buildings, facilities and grounds that comply with all health and safety requirements and are suitable for the delivery of learning programs. Each school must also ensure that procedures are in place for risk management [*School Education Act 1999, Section s159 (1)(f) and (g)*].

Curriculum

Curriculum refers to a school's teaching and learning programs. This includes such programs which provide enriching experiences for students and programmes for students with disabilities. In Western Australia all curriculum is guided by the learning outcomes and the shared values as outlined in the Western Australian Curriculum Framework [*School Education Act 1999, Section s159 (1) (b)*].

Student Learning Outcomes

Student learning outcomes refers to student performance and achievement. It includes any external indicators of student achievement and aims to ensure continued learning improvement for all students [*School Education Act 1999, Section s160 (1)(d)*].

Levels of Care for Students

Levels of care for students refers to all school policies and procedures aimed at ensuring a caring, safe and healthy environment for students. Each school must ensure that its policies and procedures comply with any applicable State and Commonwealth laws, and that the staff is advised of any obligations under those laws [*School Education Act 1999, Section s160 (1)(e) and s159 (k)*] .

Disputes and Complaints

Disputes and complaints refers to such disputes and complaints about the provision of education and the manner in which each school receives and deals with these. It is incumbent upon the school to deal fairly and efficiently with each complainant [*School Education Act 1999, Section s159 (1)(j)*].

Compliance with Written Laws

Compliance with written laws refers to the school's compliance with any written laws affecting its operation. All of the school's policy and procedure documents must reflect legal compliance [*School Education Act 1999, Section s160 (1)(g)*].

The Association of Independent Schools of Western Australia (AISWA)

In the present study, the School Administrators who have participated are leaders of schools that are members of the Association of Independent Schools of Western Australia (AISWA). Established in 1962 as a non-profit organisation, AISWA supports

and represents the interests of independent schools in Western Australia. As an incorporated body, AISWA advises the Government of Western Australia on most non-government school matters. It also distributes the Commonwealth funding allocated to non-government schools. Its member schools educate over 72,000 students and employ some 4,350 teaching staff. Since 2004, most AISWA registered schools would have completed at least two formal school registrations.

Research Questions

The main purpose of this study is to investigate the relationship between school improvement and the formal school registration of non-government schools in Western Australia. Placed within the context of twelve criteria used during the formal school registration process, it considers what School Administrators believe regarding the relationship between school improvement and this new formal school registration process. And, in their beliefs, which of the twelve criteria used in the formal school registration process, if any, contributes to school improvement. This study employs an innovative Rasch Measurement Model which guides the development of 12 questionnaires, the data collection and data analysis, and which has determined the following seven key research questions.

1. Can a linear, unidimensional scale be constructed using a Rasch Measurement Model to measure the Beliefs of School Administrators that Actual School Improvements Were Due to Formal School Registration and contain items concerning twelve criteria used during the formal school registration process of non-government schools?
2. Can a linear unidimensional scale be constructed using a Rasch Measurement Model to measure the Beliefs of School Administrators that Expected School

Improvements Were Due to Formal School Registration and contain items concerning twelve criteria used during the formal school registration process of non-government schools?

3. Are there inter-relationships between and amongst the twelve criteria used during formal school registration, such as between: School Governance (criterion 1) and School Staff (criterion 6); Care for Students (criterion 10) and Disputes & Complaints (criterion 11); and School Curriculum (criterion 8) and Learning Outcomes (criterion 9)?
4. Are the beliefs of School Administrators regarding school improvement due to formal school registration influenced by their personal and school circumstances, namely: (1) school location; (2) school size; (3) school type; (4) gender; (5) administrator seniority; (6) qualification; and (7) age?
5. Will the beliefs of School Administrators identify school improvements due to formal school registration that are very easy, moderately easy, hard and very hard ?
6. Can non-linear Guttman scales be created for each of the twelve criterion of formal school registration and are these consistent with the Rasch-created linear measures?
7. What attitudes do School Administrators have regarding school improvement and formal school registration, that are not addressed by the twelve formal registration criteria?

Significance of this Study

This study is significant because it breaks new ground in research regarding a new formal school registration process. It puts the spotlight on an important school

development which has not previously been researched. And, thereby it provides the Government of Western Australia with an opportunity to ‘fine-tune’ this formal school registration process. In addition, the study represents the first of its kind through the construction of an objective measurement concerning the beliefs of School Administrators on the relationship between school improvement and formal school registration. Other educational researcher may seek to employ and develop the two linear measures created in this study. Lastly, this study provides School Administrators and their schools with the opportunity to talk about their beliefs on the benefits and the challenges of a new inspection-type formal school registration process.

Limitations of this Study

There are number of limitations to this study. First, this study is restricted to those School Administrators in schools that are members of the Association of Independent Schools in Western Australia. Hence, the study ignores systemic independents schools, e.g. the Catholic School Sector. Second, the study does not include the beliefs of several educational stakeholders, such as classroom teachers, students and parents or guardians. While it may be that the teachers’ lessons and student learning which form the heart of what schools do, this study suggests that School Administrators are arguably the key decision-makers in schools (Department of Education Services, 1999). Hence this study has focused on the beliefs of School Administrators. It is their perceptions that have significantly contributed to this study.

Lastly, the study acknowledges the dynamic nature of school improvement and that the beliefs of School Administrators are subject to change. It is also possible that during this study, the Government of Western Australia may have improved the formal school registration process, but this has not been taken into account.

Definitions of Terms

The terms listed below, in the regards to this study, have the following meanings.

School Administrator

In this study a ‘School Administrator’ is someone who makes or contributes to making key decisions at school. This person can be a School Principal, Deputy Principal, School Council Chair or Council Member.

Independent or Non-Government School

In this study an independent or non-government school is one which is autonomous and governed by a School Council. This kind of school is self-determined and usually managed on site.

Registration Criteria

The registration criteria are those educational standards which are non-negotiable, meaning that regardless of a school’s philosophy or ethos, these criteria must be met in order to be a registered school in Western Australia. The criteria were legislated by the Government of Western Australia in the School Education Act of 1999.

Formal School Registration

The term Formal School Registration process may be understood to involve School Inspections or School Evaluations, as performed by the Department of Education Services officers in Western Australia. Both of these terms are used within the European context of a Formal School Registration process.

School Improvement

In this study, school improvement is understood in terms of the beliefs of School Administrators that school improvement was expected to occur or has actually

happened due to formal school registration. It does not therefore concern any possible measures of school improvement, such as the test results of student learning.

Overview of the Study

This thesis is made up of four parts with a total of thirteen chapters. Part one, comprising of chapters one to four outlines the introduction, literature review, conceptual framework and Rasch measurements; part two comprising of chapters five to ten outlines the methodology, quantitative data collection and analysis; part three comprising of chapters eleven and twelve reports on the qualitative data collection and analysis; and part four provides a summary, discussion and conclusion to the study. Technical information is presented in the Figures, Tables and Appendices.

Part One

Chapter One presents the historical setting and context of this study. It provides the information needed to set the direction and research questions of this study. It considers the significance and limitations, and defines the key terms associated with the matters of this research.

Chapter Two presents the literature review and provides the broad contextual knowledge of formal school registration. It describes the origin of the twelve criteria and compares the practice of school registration three educational jurisdictions. A summary of four observations from the literature review is outlined.

Chapter Three explains the conceptual framework and the construction of a questionnaire used in this study. It describes the twelve criteria and provides the rationale for any expected inter-relationships between them. The chapter concludes

with seven key questions that can be answered from the conceptual background of this study.

Chapter Four presents a consideration of the theory of measurement. It points out the difficulties associated with current measurement models and contends that the Rasch Measurement model is better equipped to create a linear, objective measure of beliefs held by School Administrators. It introduces the RUMM 2030 computer program and concludes with an explanation of Guttman Scaling and why it became part of this study.

Part Two

Chapter Five presents the research design and methods used in this study. It highlights the advantages gained through the adoption of a mixed methods research approach. This chapter describes the administrative and ethical approvals obtained for the study and further outlines the study population and sample and methods of data collection. The chapter concludes with a description of the procedures used to organise and analyse the data.

Chapter Six records the initial Rasch analysis and the final Rasch analysis output supporting the creation of a Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration. The chapter reveals the summary supporting statistics, the standardized fit residuals, the Item Characteristic Curves, the Response (Scoring) Category Curves, the ordered thresholds and some targeting graphs based on the data from a questionnaire. The chapter ends with a summary of the main findings.

Chapter Seven presents the second part of the Rasch analysis. The chapter describes the Rasch analysis output which supports the creation of a Linear Scale of

School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration. The chapter reveals the summary of supporting statistics, the standardized fit residuals, the Item Characteristic Curves, the Response (Scoring) Category Curves, the ordered thresholds and some targeting graphs based on the data from a questionnaire.

Chapter Eight presents the inter-relationships between and amongst the twelve criteria of school registration and the School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration. The chapter explains the reason for using a Guttman Scale and reports on those that were created. It outlines the common elements of the findings between a Guttman Scale and a Rasch linear measurement.

Chapter Nine presents the inter-relationships between and amongst the twelve criteria of school registration and the School Administrators' beliefs that expected school improvements were due to formal school registration. The chapter confirms the previous measurements and outlines several conclusions.

Chapter Ten presents the results of and describes the inter-correlations between twelve criteria of school registration and five context variables, namely; school locations, school size, school type, School Administrator gender and seniority. Further, it outlines the findings of the cross tabulations of the school improvements, that were considered to be the hardest to improve, and the selected context variables.

Part Three

Chapter Eleven presents the data analysis and discussion from interviews with School Administrators regarding school improvement and the formal school registration

process. It focuses specifically on the analysis of the expressed thoughts and opinions about the formal school registration process. Through this data analysis, the chapter answers the seventh research question; what attitudes do school administrators have regarding school improvement and formal school registration that are not addressed by the twelve formal school registration criteria?

Chapter Twelve presents data analysis of the written comments of School Administrators regarding school improvements and the formal school registration process. It builds on the findings previously reported in Chapter Eleven and incorporates the description of twelve criteria presented in Chapter One.

Part Four

Chapter Thirteen presents a summary of the study, pulling together the major findings from the quantitative and qualitative data analysis. It considers the analysis of data gathered from the Rasch measures used to create a linear scale of School Administrator's beliefs that actual school improvements were due to formal school registration (from Chapter Six) and a linear scale of School Administrator's beliefs of expected school improvements that would occur due to formal school registration (from Chapter Seven). Next, it summarises the quantitative data gained through twelve Guttman Scales highlighting the connection between the results of all the quantitative data analyses (from Chapters Eight, Nine and Ten). This chapter then ties together the issues presented through the qualitative data (from Chapters Eleven and Twelve). A summary of the major findings, within the context of seven research questions that were proposed at the onset of this study, is provided and the chapter concludes with a discussion and the implications of this study.

CHAPTER TWO

LITERATURE REVIEW

With the introduction of the new School Education Act of 1999, the administration of the formal relationship between the Government of Western Australia and the Non-Government Schools changed. No longer would the School Administrators in those schools anticipate the annual inspection visit from the local District School Superintendent or Director of Education, but instead they would now need to submit a formal school registration application, seeking the permission of the Minister of Education to extend the educational services of their school for another period of time. In Part 4 of the new School Education Act of 1999, the Government formalized the regulations and criteria through which a Non-Government School could become and remain a registered school.

The literature review of this study discovered no written accounts outlining the origin of the twelve criteria used in formal school registration. Similarly, it was not possible to examine any research data regarding the impact of a new School Education Act of 1999 and how a new formal school registration had changed non-government schools. In response to this situation, the literature review presented in this chapter begins with an oral or spoken literature review that examined how the twelve criteria of formal school registration came into being, who wrote them and what determined their basis.

Next, since the conceptual framework of this study is embedded within the twelve criteria of formal school registration, due to the lack of any research regarding the beliefs of School Administrators to the relationship between school improvement and formal school registration, nor any literature on the beliefs or experiences of School

Administrators in the non-government schools of Western Australia, the chapter presents a review of related literature pertaining to the formal school registration process within three other educational jurisdictions. Since these jurisdictions have similar legislatively imposed criteria for formal school registration, their inclusion in this review broadens the understanding of the relationship between school improvement and formal school registration. It should be noted, that in those educational jurisdictions, school registration involves a school inspection process. Next, some attention is then given to the important function or role of the School Administrator in relation to the formal school registration process. The conclusion of this literature review pulls together several observations regarding formal school registration and related research into its impact on school improvement.

The Historical Context of Twelve Criteria used in School Registration

There is no written account of the history concerning the development of a formal school registration process in Western Australia. However, Mrs. Gillian Jenkins who was commissioned to draft the formal school registration process, including the standards of the twelve criteria, agreed to speak with this researcher and described how the standards were developed (See also *Journal Entry – Mrs. Jill Jenkins*, Appendix D). In addition, Mr. Bronte Parkin, the Executive Director of the Office of Non-Government Schools, who had commissioned Mrs. Jenkins and assisted her, also shared his account of this time and his opinions regarding the criteria used in formal school registration (See also *Journal Entry – Mr. Bronte Parkin*, Appendix E). Lastly, the researcher was able to interview the first Non-Government Schools Registration Manager, Mr. Edward Simons, who implemented the new school registration process

(See also *Journal Entry – Mr. Edward Simons*, Appendix G). What follows is a brief summary of the development of twelve criteria used in school registration.

In 1997, it was a Ministerial Project Team, led by Dr. Ken Evans and a highly qualified Reference Group with a wide range of interests, who were appointed by the Hon. Norman Moore, former Minister of Education (See *Journal Entry – Dr. Ken Evans*, Appendix F) that put together West Australia's new School Education Act of 1999 and the twelve criteria of the formal school registration process for non-government schools. However, the task of developing and writing the actual standards of the twelve criteria, as required by the new School Education Act of 1999, became a mandate that was given to the Office of Non-Government Schools. The Office of Non-Government Schools, which was established by the Western Australian Government in March of 1994, had previously supervised the registration of new non-government schools and generally intervened on behalf of the Minister of Education in matters relating to non-government schools.

The Office of Non-Government Schools, which was renamed the Department of Education Services in 1996, frequently employed retired school superintendents, who had previously worked in the Department of Education as District School Superintendents. While temporarily employed with the Department of Education Services, these former District School Superintendents inspected new non-government schools seeking registration. The District School Superintendents were required to submit an inspection report which was filed with the Department of Education. However, there were no actual prescribed standards nor was there a formalized inspection process. The retired District School Superintendents were considered to be educational experts who had acquired a wealth of knowledge about schools and thus

were able to assess the efficiency of a non-government school. Prior to the School Education Act of 1999, a registered non-government school was simply classified as an ‘efficient’ school (www.austlii.gov.au, 2010).

In 2003, the Department of Education Services employed Mrs. Gillian Jenkins as a permanent staff member and commissioned her with the mandate to put together the final school registration process which the Minister of Education would use to review the application of a non-government school seeking registration. Mrs. Jenkins, a former employee with the Curriculum Council (of Western Australia), would need to spell out the exact standards or requirements of the twelve criteria used in formal school registration. For example, although the School Education Act of 1999 (sec. 159) stated that *The Minister, in determining an application for registration is to take into account, (b) the school’s curriculum* (www.austlii.gov.au, 2010), it would be Mrs. Jenkins who would subsequently determine what might constitute a good standard of school curriculum. Similarly, although the Act (sec. 160) stated that *The Minister is to register the school if the Minister is satisfied that, (b) the members of the governing body are fit and proper persons to operate a school* (www.austlii.gov.au, 2010), it would be Mrs. Jenkins who would provide the final description or standards regarding what might constitute a fit and proper person. Mrs. Jenkins was given one year to complete this mandate.

In March of 2003, work on the development of the standards began with the assistance of the retired District School Superintendents who had been temporarily employed by the Department of Education Services to conduct the inspections of new non-government schools. It was they who provided Mrs. Jenkins with advice regarding the standards that were used during the inspection of new non-government schools.

Consequently, through the advice of the retired District School Superintendents, an indirect link was established between the standards of education in government schools, as identified by the former District School Superintendents, and the new standards which would be used during the formal registration process for non-government schools. One example of this is evident in the standards regarding School Curriculum (Criterion 8) - non-government schools were requested to adopt a 'whole-school' curriculum plan that was linked to the West Australian Curriculum Framework and common to both school systems (www.det.wa.edu.au/accountability, 2002; & www.des.wa.gov.au, 2010). Although it is now impossible to determine the degree of influence brought on by the advice of the retired District School Superintendents, it is safe to assume that the original twelve criteria and standards were not completely unique to the non-government schools of Western Australia.

Mrs. Jenkins reported that she had worked closely with Mrs. Audrey Jackson, the Executive Director of the Association of Independent Schools of Western Australia. As Executive Director of the body representing non-government schools in Western Australia and previously the principal of a non-government school, Mrs. Jackson voiced the opinions of the non-government schools and reviewed each draft standard prior to its adoption. Although Mrs. Jackson's involvement fulfilled the requirements of the School Education Act of 1999, Sec. 160 (c) which required the Minister of Education to consult with the Association of Independent Schools of Western Australia (www.austlii.gov.au, 2010), no formal agreement, or joint authorship, is attributed to the standards of formal school registration. In addition, it can be pointed out that School Administrators at non-government schools were not invited to participate in the discussions regarding the criteria and standards of formal school registration.

On the 2nd of December 2003, the Hon. Mr. Alan Carpenter MLA, Minister of Education and Training, approved ‘the statement of standards’ to be considered by the Minister under section 159 of the School Education Act of 1999 during the formal registration process of a non-government school (Department of Education Services, 2010). The School Education Act of 1999, which came into force in 2001, included a three year transitional period to prepare for the implementation of the new formal school registration process. By the end of 2004, the Department of Education Services had completed the formal registration of non-government schools in Western Australia (see the Annual Report of the Department of Education Services, 2004).

School Registration Criteria in Three Educational Jurisdictions

There are no published research data or literature from Western Australia in regards to the formal registration of non-government schools. However, as indicated by Mr. Bronte Parkin, the then Executive Director of the Office of Non-Government Schools, the process whereby the development of the standards of formal school registration occurred, included an examination of the criteria and standards current within several other educational jurisdictions. In particular, attention was given to the criteria of formal school registration in three jurisdictions, namely: Tasmania, New Zealand and the United Kingdom. What follows is a review of published documents and related literature regarding the formal school registration process in these jurisdictions.

School Registration Criteria in Tasmania

A review of the School Registration Handbook of Tasmania reveals a number of striking similarities between its formal school registration processes and that of Western Australia (www.schools.education.tas.gov.au, 2012; and www.des.wa.gov.au, 2012).

First, the jurisdictions have allotted the responsibility of formal school registration to the Minister of Education (www.austlii.au , 2012). Next, the Ministers have assigned the task of formal school registration to a designated government agency that functions alongside and within, but is supposedly separate from, the State Department of Education. In Tasmania this agency is known as the Schools Registration Board and it differs only from its Western Australian counterpart, the Department of Education Services, through the nomination of board members by the Tasmanian Independent School Association. In Western Australia, it is the Minister of Education who appoints the school inspection panels, without any input from the non-government schools. Second, the process of formal school registration within each jurisdiction follows a similar pattern involving the submission of an application, a desktop audit of school documents, an inspection visit to the school and an official or formalized reporting procedure. Third, the number and the nature of the criteria of formal school registration are quite similar. While not identical, the following criteria are found to be common in the jurisdictions, namely: School Curriculum, School Staff, School Infrastructure, Number of Students, Enrolment & Attendance, Financial Viability, and Disputes & Complaints. In these jurisdictions, the formal school registration processes rely heavily on the assessment of documents related to the criteria of formal school registration.

According to Bernasconi (2004), in his study entitled, *Current Trends in the Accreditation of K-12 schools: Cases in the United States, Australia and Canada*, this type of Australian school registration process typifies a centralized state inspection system which is not unlike and probably modelled on the traditional English external inspections conducted by OFSTED (Office of Standards in Education). As Gurr (2007) explains, Australia's school inspections were designed after the British model (Gurr, 2007, p 199-201). A key to this kind of school registration process (inspections) is its

dependence on schools meeting a number of criteria or standards (as already mentioned) that are used to assess school performance during inspections by external persons or by school self-evaluations.

In their study, *Towards a Theory on the Impact of School Inspections*, Ehren and Visscher (2006) point to the work of Smith (1995) and Van Thiel, Leeuw et al., (2003) suggesting that formal school registration (through inspections), which is heavily dependent on standards (performance indicators), tends to encourage planning and the improvement of short term measurable goals. Likewise, although considered within the context of a government school review process, Kertexz's (2008) investigation into the *Evaluation and professional development practices in Tasmanian High Schools*, reveals that accountability standards alone were insufficient in generating school assessment that resulted in improvement. Kertexz (2008, p.19) highlighted the need for schools to have a sense of ownership and trust in the standards used during the school registration process. The school accountability (registration) standards literature describes examples of a school self-assessment processes such as the formal school registration process of non-government schools in New Zealand.

School Registration Criteria in New Zealand

The New Zealand system of education and its formal school registration process resembles the Western Australia situation in many ways. It has a similar three-tier model of primary, secondary and tertiary education, and recognizes state and independent schools (Government of New Zealand, www.legislation.govt.nz, 2012). As outlined in Part 3 (sec.35) of the New Zealand, Education Act of 1989, formal school registration is a legislative requirement and administered by the Education Review Office (www.ero.govt.nz, 2012). The New Zealand process of school registration

begins with an application that is submitted by the School Administrator. Likewise, it includes an audit of school documents, a school inspection and a formalized reporting procedure (www.minedu.govt.nz, 2012). However, the requirement of a 'school charter' forms a key standard of the New Zealand formal school registration process (Macpherson, 1998). The 'school charter' is a significant document linked to the assessment of non-governments in New Zealand (Crooks, 2002a). It contains a strategic plan that sets the direction of a school towards school improvement and forms a basis for school review. Cuttance (1995) explains that this type of quality management, or assessment of standards for school accountability (formal school registration), concerns a school self-assessment which serves to support the process towards, and the goal of, school improvement.

Self-evaluation is more effective for school development if it is directly linked to the development plan for the school, rather than take an omnibus approach in an attempt to comprehensively review all aspects of the operations of a school. (Cuttance, 1994, p. 108)

Similarly, in another study regarding *School accountability in Western Australia*, Duggan (2009) concludes with the following statement that emphasizes the benefits of a school registration requirement which promotes school self-assessment.

This study finds, in the context of the Western Australian public schools studied, that school self-assessment impacts more positively on the practices of educators and brings about more improvements for students, than school review. (Duggan, 2009, p.151)

Gurr (2007) describes the system of school review in Victoria and points to the benefits of a school self-evaluation process that is able to uncover the strengths and weaknesses of schools. He suggests that planning for improvement lies at the centre of a meaningful school registration process. However, Learmouth et al. (2000) examined and documented some deficiencies of the traditional school inspection model for formal

school registration, such as being too constrictive, too narrowly focused and not really leading to school improvement in important areas of equality, quality in learning, creativity and new technology. However, not all studies find agreement with these deficiencies.

An investigation by Dettman (1988) regarding, *The accreditation model of whole-school evaluation in Australian Independent Schools*, discovered a number of inadequacies which raised questions about the American goal-oriented accreditation model. Dettman (1988) noted that during the school self-assessment process, School Administrators were able to generate a selective data collection process linked to the school's improvement plan. Although more comprehensive in design, the school improvement focus, or goal-oriented school review, it was said, ignores unexpected and unintended outcomes in schools (Dettman, 1988, p.10).

While somewhat dated, the Dettman study is not alone in its concerns regarding a formal school registration process that incorporates the 'school charter' assessment standard, which has been introduced in New Zealand (Thrupp, 1998; Crooks, 2009; O'Neill, 2002). More recently, Barber (2004) observes the following caution and highlights the need to carefully examine the criteria of formal school registration.

....The shared moral purpose of almost every educator I know is to improve outcomes for all students and simultaneously promote equity.Since the mid-1980's that development and implementation of strong accountability systems has been one of the most powerful, perhaps the most powerful, trend in education policy in the UK, USA and many other countries including Holland, Australia, Canada, Sweden and Russia. My central point in this lecture is that a system of strong external accountability, correctly designed, can make a decisive contribution to the achievement of that widely shared moral purpose. (Barber, 2004, p. 18)

Thrupp (1998) compares New Zealand's Education Review Office (ERO) and England's Office for Standards in Education (OFSTED), pointing out some similarities

between these two jurisdictions. Gordon and Whitty (1998) suggest that policies and practices were shared between them. Thrupp (1998) identifies many of the common features and criteria of school inspection and suggests that these jurisdictions should, but do not take into account, the socioeconomic status of a school. He argues for the need to implement a strong external accountability process where standards are able to negate the in-take differences between schools and their communities. Failure to include the school's socioeconomic status has resulted in the 'politics of blame', wherein no one is willing to accept responsibility for a school's results (Thrupp, 1998, p.195).

Burgham (2000) describes a New Zealand middle class who are more reluctant to embrace the school inspection in regard to the standards of a school self-assessment process, noting a culture of greater trust and tolerance towards external school review. Matthews and Sammons (2004) explain that the Office of Standards in Education is understood within the context of school improvement and well placed to incorporate the external review of standards related to the results of national tests. Relatedly, the government publications from these jurisdictions highlight the need for transparency for all the stakeholders of the formal school registration process (www.ofsted.gov.uk , 2012).

School Registration Criteria in the UK

Established in 1992, the Office for Standards in Education (OFSTED) coordinates and conducts the inspection of England's educational system. (www.ofsted.gov.uk, 2012). The Annual Report 2011/12 begins with these words.

This is Sir Michael Wilshaw's first Annual Report as Chief Inspector of Education, Children's Services and Skills. It is underpinned by the findings of nearly 25,000 inspections carried out during 2011/12 – of schools, early years

and childcare, services for children and families, adult learning and skills, and colleges. (www.ofsted.gov.uk/aboutus/annualreport/ , 2012)

Under Section 162A of the Education Act of 2002, the school inspection of a *non-association* independent school is carried out by OFSTED. The purpose of school inspection is to advise the Secretary of State for Education of the school's suitability for continued registration as an independent school. Concerning the registration or school inspection of 1,200 *association* independent schools, with approximately 500,000 students enrolled, that are members of the Independent Schools Council, the Education Act of 2002 provides for the inspections of those schools to be carried out by the Independent Schools Inspectorate (ISI) (www.isi.net , 2012). Reports of school inspections at association independent schools are submitted to the Department of Education and not to the OFSTED.

Regardless of an independent school's status, the seven criteria listed in Section 157 of the United Kingdom Education Act of 2002 form the basis of the school review and apply to all independent education providers. They are: (1) the quality of education provided at independent schools; (2) the spiritual, moral, social and cultural developments of pupils at independent schools; (3) the welfare, health and safety of pupils at independent schools; (4) the suitability of proprietors of and staff at independent schools; (5) the premises of and accommodation at independent schools; (6) the provision of information by independent schools; (7) the manner in which independent schools handle complaints (Department of Education, www.legislation.gov.uk , 2012). While the numbers of criteria differ, they are all meant to advance student learning achievement and ensure the well-being and safety of students (www.isi.net , 2012).

As in other educational jurisdictions, the OFSTED school inspection also begins with the submission and audit of school documents, includes a school inspection visit and concludes with an official recommendations report (www.ofsted.gov.uk , 2012). However, although similar in many ways, there is a key difference in the purpose of criteria for formal school registration in the United Kingdom and Western Australia. This difference is apparent in the notion of ‘improvement through inspection’, which is linked to the purpose of OFSTED school inspections (Matthews & Sammons, 2004), and is not present in the formal school registration process of Western Australia. Evidence of this difference in purpose was made clear during the Western Australian, Education Act Review Project, Legislative Assembly, Committee Debate held on the 28th April 1998. During that debate the government of Western Australian voted down the amendment which sought to describe education as being ‘education of the highest quality’ (Hansard, 1998, p. 2010). The Minister of Education responded with these words.

We would all like to go further, as the member suggests, to say that every child receives an education of the highest quality. However, the practical reality is that it will not happen. It does not happen today. It has never happened, and it probably never will happen. Despite all the endeavours we will not be able to provide an education of highest quality under many conditions to many groups, in many locations in this state. The education system is advancing, but to include those sort of subjective criteria is not appropriate. The objects have been thought through very carefully. They have been debated at length by many contributors to this Bill. (Hansard, 1998, p. 2011)

Following the enactment of the new School Education Act of 1999, the purpose of criteria is further clarified by the following statement taken from the Government of Western Australia 2010 School Registration Handbook.

“In assessing each of these criteria, a statement of the minimum benchmark of performance and the evidence that *must* be complied with are described for each of the following:...”. (Department of Education Services, 2010)

Contrary to the Western Australian situation, Wilcox and Gray (1996) mentioned the OFSTED advantage of greater ‘objectivity’ through school inspections leading to school improvement that is less dependent on ‘self-evaluation’ (Wilcox & Gray, 1996, p. 112). However, the Cambridge Primary Review, which was launched in October 2006, as a wide-ranging independent enquiry into the condition and future of primary education in England, stated that it was time for the government to end its micro-management of education. The eleventh and final recommendation of the Cambridge Primary Review calls on national agencies, such as OFSTED, to be independent advisers, rather than ‘political cheerleaders or enforcers’, and to be convincing in their mandate to improve education (Alexander, 2010).

Ehren and Visscher (2006) suggest that the evidence is inconclusive regarding the full impact of school inspections in relation to school improvement. They point to a mixture of positive and negative results from studies examining the effects of school inspections (Earley, 1998; Gray & Wilcox, 1995; Kogan & Maden, 1999; Shaw et al., 2003; and Rosenthal, 2004).

Although the few (mostly qualitative) studies show a mixed picture, strong empirical evidence on the effects of school inspections is still lacking. (Ehren & Visscher, 2006, p. 53)

According to Matthews and Sammons (2004), the role of the School Administrators and their interaction with school registration officers significantly determines the potential for school improvement. Hence, this literature considers several aspects related to the role of the School Administrators during the formal school registration process.

The Role of School Administrators in Formal School Registration

It can be said that during the formal school registration process of non-government schools in Western Australia, the role of a School Administrator is one that identifies with Gurr's (2007) description of the key person in a school who must accept the ultimate responsibility for what happens at school. Beginning with the submission of the school registration application, it is the School Administrator who guides and completes the school's response to the criteria of formal school registration (Department of Education Services, 2010). The School Administrator facilitates the registration process and hence, serves as the link between the school and the Minister of Education. This is in line with the suggestion of Leithwood and Jantzi (2005) that it is the responsibility of School Administrators to realize school improvement through the government policy of school assessment. Likewise, Leithwood, Jantzi, Earl, Watson, Levin and Fullan, (2004) observe that the School Administrator exerts direct and indirect influence on the policies of accountability intended to improve student achievement.

Although considered within the context of school improvement in government schools, in a study investigating the opinions of School Administrators on school accountability in Western Australian, Strickland (2003) found that School Administrators resented the demands of school accountability. School Administrators suggested that the policies of school review should be directed at school improvement, rather than the legislative compliance measures which were aimed at greater financial accountability. School Administrators in Western Australian state schools described a centralized form of administrative control that discouraged their participation in school assessment (Strickland, 2003). In contrast, Elmore (2005) notes that when School

Administrators assumed greater control (participation) of internal or professional accountability, then school improvement is likely to be enhanced.

In a study on principal leadership in Western Australian state schools, MacNeill and Cavanagh (2007) explain how a new managerial or neo-liberal approach to school accountability has led to a preoccupation with accountability at the risk of school improvement in teaching and learning. Following a survey and interviews with school principals, the MacNeill and Cavanagh (2007) study revealed that new managerial pressures have impacted heavily on the role of school principals and their pedagogic leadership in schools. They state the following.

With severe sanctions in place, particularly in relation to financial accountability, most principals will ensure that these accountability aspects of the role are attended to, even at the risk of ignoring student's learning. (MacNeill & Cavanagh, 2007, p. 230)

Not surprisingly, the results of a case study by Dempster (2000) point to a steady increase of bureaucratic demands on School Administrators. Stemming from the expectations derived through government accountability policy, which were intended to give School Administrators greater autonomy, the Education Department found a new way to lay the blame for any failure at the feet of School Administrators (Dempster, 2000). In an age of accountability there is a heightened sense of alienation and School Administrations need now to work longer hours meeting the requirements of a school registration process (Williams et al., 1997; MacBeath, 1998). While all of the above research is based within the setting of state-government education, this literature suggests that a similar sense of accountability, which is linked to the role of the School Administrator, may also be present within the formal school registration process of non-government schools.

Although there is ample literature to describe school accountability and the leadership skills that contribute to school improvement, how these aspects of education inter-relate within the context of a formal school registration process remains relatively unexplored. The following literature review considers two comparative European studies investigating school evaluation.

Comparative Studies of School Evaluation in Europe

The motto of ‘The Standing International Conference of Inspectorates’ (SICI), which is ‘Better Inspection, Better Learning’, embodies the essence of research into the relationship between school improvement and formal school registration, or school inspections, as it is known elsewhere. Founded in 1995, this European organization of national and regional inspectorates of education serves as a forum for the exchange of experiences, information and discussion regarding the quality of school inspection (www.sici-inspectorates.eu , 2012). It is built on the premise that all countries want their education system to be as good as possible. The thirty-two member countries acknowledge that the balance between a focus on accountability and school improvement varies from one country to another. Commissioned by the SICI, van Bruggen (2010), published a comprehensive review of school inspections in Europe entitled, “Inspectorates of Education in Europe; some comparative remarks about their tasks and work.” (www.sici.eu , publications, 2010). Whilst this work highlights general agreement in the choice of criteria used during formal school registration, such as the inclusion of a School Curriculum Criterion, there appears to be some confusion regarding the difference between a criterion and an ‘indicator’ (standards) (van Bruggen, 2010, p.52). Hence, this study also calls for a deeper analysis of the instruments of standards used in scoring and judging ‘good teaching and good learning’

(van Bruggen, 2010, p.53). While informative, the study lacks a quantitative analysis of the data regarding the criteria used during the formal school registration process.

The Education, Audiovisual and Culture Executive Agency (EACEA), is another European multi-national organization, established in 2006, that has contributed to the body of knowledge regarding school improvement and the methods used to evaluate education (www.eacea.eu , 2013). In a study that compared the process of school evaluation in eleven different countries, the following fourteen criteria were highlighted; (1) Classroom Teaching/Learning; (2) Guidance and Support of Pupils; (3) Functioning of the Bodies/Organization of the School; (4) General/Educational Policy of the School; (5) Relations between the School and Local Community/External Relations; (6) Human Resources Management; (7) School Time Management; (8) Extra-Curricular Activities; (9) Internal Evaluation; (10) Leadership; (11) The Atmosphere at a School; (12) Building Management; (13) Management of Financial and Material Resources; and (14) Administrative Procedures. The study revealed that in most cases, the criteria were legislative requirements determined by the Minister of Education. Noteworthy of this school evaluation process, and the list of criteria, is its resemblance to the Western Australian situation and its twelve criteria of formal school registration.

In the preface of the *Eurydice Report, Evaluation of schools providing compulsory education in Europe (2004)*, the European Commissioner for Education and Culture, Viviane Recling writes.

Compulsory quality education for all is the essential foundation required to construct a real Europe of knowledge.... However the mechanisms needed to measure and promote this quality still have to be developed... quality evaluation in schools takes several forms. Each country has developed an approach that corresponds both to its method of managing and organizing its education system and to its objectives. Over and above this diversity lies a growing awareness of

the need for quality control and improvement.... Quality evaluation in school education is thus at the heart of the objectives for 2010 with which education and training systems have been entrusted... .
(www.eacea.ec.europa/education/eurydice/ , 2004)

Whilst the comparative study carried out by EACEA (see www.eurydice/report/ 2004), provides a detailed account of the approaches to the evaluation of schools in Europe, as was the case with the SICI study, the analysis of quantitative data regarding the school registration criteria remained undone. The factors affecting the relationship between school improvement and school inspection (registration) remains unknown.

Additional Studies on Formal School Registration

Although the Government of Western Australian has distanced itself from this relationship, through the absence of a legislative obligation to provide an ‘excellent or quality education’ in the Education Act of 1999, it can yet be suggested that the formal school registration of non-government schools will lead to school improvement. This may be because, when these schools are held accountable to meet the criteria of formal school registration, it infers that school improvement will occur in those schools that have been unable to meet or comply with all the requirements of formal school registration. However, contrary to this being a straight forward presumptive relationship, the exact nature of the relationship between school improvement and formal school registration is an extremely complex entity. Research has only just begun to uncover the various facets of the phenomenon (see Ehren & Visscher, 2005). Consequently, although the situational circumstances may differ, the international research on school improvement and school inspection has relevance to the present study.

In a literature review of the Inspectorates of Education in six European countries, Ehren, et al. (2012) described the findings of a study that considered a number of cause and effect assumptions of the relationship between school inspections and school improvement. By means of data collected through interviews with inspection officials and the analysis of school inspection documents, and each considered within the context of research knowledge, the study paid particular attention to the causal assumptions connected to the criteria and standards used in school inspection, the types of feedback and reporting, and the sanctions, rewards and interventions applied to motivate schools to improve. The study highlighted the commonalities and differences between six European nations, and provided a clear outline of relational assumptions linked to relationship between school improvement and school inspection. For example, although all European Inspectorates strive to enhance good education, the precise definition of ‘good education’ did vary from an equity-related, or equal opportunities perspective, to an acceptance that good education can be equated to the indicators of quality of teaching and learning. The study makes clear that more research is needed to fill in the gaps of the ‘causal chain between the actions of stakeholders and the improvement of schools...’ (Ehren, et al., 2012, p.31).

Dedering and Muller (2010) describe a study of ‘the first empirical insights from Germany’ (Dedering & Muller, 2010, p.1). Since the 1990s, much like Western Australia, Germany has pursued a school accountability policy which was influenced by the international scene, primarily England and the Netherlands. This study provides a comparative review of the school inspection process and highlights a number of differences. For example, unlike England and the Netherlands, in Germany, the school inspection reports are kept private with the school administrator and not distributed to parents. The study surveyed the views of 600 principals in the federal state of North

Rhine-Westphalia that were externally evaluated during the years 2005 to 2008, and asked them about how they assessed the results from the school inspections and how they used those results in terms of designing measures for the quality improvement of their schools. Next, considered within the context of an international setting and research knowledge, this study showed that these German schools have found school inspections to be a positive impact on the school's quality development processes. While similar results were noted in earlier English research (Earley, 1998; Gray and Wilcox, 1995; Kogan and Maden, 1999), in this study only 12% of the principals were not convinced of the assistance generated by the school inspection process. As with the previous study, Dederling and Muller (2010) call for more and better studies into the school inspection process.

Presently, empirical research on the effects of school inspections is scarce, not only in Germany, but also in other countries with longer traditions in the field such as the United Kingdom and the Netherlands. (Dederling & Muller, 2010, p. 319)

In a study dealing with the tensions of school accountability and school improvement, Brauckmann and Pashiardis, (2010) examine Cyprus' transition from an internal school evaluation process to a mixed internal-external school inspection process. The study recounts the development of school inspection and its application to the Cyprus situation. Based within a context of research knowledge, the study examines the interaction between the internal appraisal process of teachers and the external school evaluation. The findings suggest a number of 'conditions' are deemed necessary to avoid a clash between these two forms of school evaluation, namely: (1) quality indicators which are less rigid; (2) inspection officials with practical school experience; and (3) recommendations which are relevant to the daily work of teachers (Brauckmann & Pashiardis, 2010, p.344). An emphasis is placed on the need for more research and a slower pace of change.

Ehren and Visscher (2006) examined the effects of school inspections on school improvement and considered if the characteristics of schools and the characteristics of school inspections might contribute to these effects. In response to the Dutch Educational Supervision Act of 2002, this study traced the development of school evaluation, pointing out the results of British research that have indicated both positive and negative effects of school inspections (Wilcox & Gray, 1996; Kogan & Maden, 1999; Matthews & Smmons, 2004; Shaw et al., 2003; Rosenthal, 2004; Ferguson et al., 2000; Brimblecombe et al., 1996; Chapman, 2001; Standaerd, 2000; and Fidler et al., 1998).

The findings of Ehren and Visscher's (2008) study, which surveyed the views of school inspectors via a questionnaire and one-on-one interviews, suggest that the inspection of schools will not automatically lead to school improvement. Ehren and Visscher (2008) found that the effects of school inspection are influenced by such contingencies as, the type of school being inspected, the actions of a school inspector and the nature of the feedback given to the school. They make the point that 'inspecting schools without follow-up and monitoring activities is probably not very effective' (Ehren & Visscher, 2008, p.226). Elsewhere, Ehren & Visscher (2006) theorise on the impact of school inspections and suggest that the negative effects of school inspection are probably not related to combinations of school characteristics, external pressure and the characteristics of the school inspection process.

Wong and Li (2010), in a study that reviewed the quality assurance program of Kindergartens in Hong Kong, recommend that an effective quality assurance mechanism should maintain a balance between external and internal evaluations (Wong & Li, 2010, p.228). While the results of in-depth interviews conducted in this study

confirmed the issues of time and workload implications, in regards to the school inspection process (SchildKamp, 2007), this study found that self-evaluation plays an important and positive role in school improvement. In reference to research by Blok et al. (2008), schools with some form of self-evaluation were considered to be better placed to deal with school inspections and more readily adopted an improvement mindset (Cousins & Leithwood, 1986; Shulha & Cousins, 1997). Wong and Li (2010) conclude by pointing out the benefits of the ‘critical friend’ function in school inspections that lead to school improvement (see also Swaffield & MacBeath, 2005).

In a more recent study by Ehren and Swanborn (2012), the effects of school inspections on school improvement were considered for inspections with a school-generated data criteria requirement, such as the results of student examinations, data from self-evaluations and parent or teacher surveys. The study describes the Dutch school inspection process and suggests, as one of its findings, that the high-stakes context in data-driven school inspections can cause, in the case of student testing results, cheating and the reshaping of the test pool. The findings support earlier research by Smith, (1995), Jacob and Levitt, 2003, and Wiebes (1998), wherein the school inspection process has a negative perspective. Ehren and Swanborn (2012) invite further research with these words, “Additional research may shed more light on this issue” (Ehren & Swanborn, 2012, p.279).

Summary of Observations

This review of literature and research regarding the relationship between school improvement and formal school registration (or school inspections) reveals a number of observations. Firstly, the formal school registration process in its current form in Western Australia, and in three other educational jurisdictions, is a relatively recent

development. There are no research data available regarding the impact of a new School Education Act of 1999 or how the new formal school registration has changed non-government schools in Western Australia. Although some studies in other educational jurisdictions have examined formal school registration, more research is needed.

Second, the literature revealed that while there are differences between the various educational jurisdictions, such as the publication of school inspection reports in some regions and not in others, generally the criteria used in formal school registration are similar. The registration criteria overlap between Australia, the United Kingdom and Europe, and Canada, and New Zealand, indicate the presence of some informal comparisons.

A third observation gained from the literature highlighted varied opinions related to the formal school registration process. The literature on the effects of formal school registration is inconclusive on many fronts and differing opinions continue on such issues as school self-evaluation versus external school evaluation, and even on the amount of emphasis on school improvement required for registration. Some research points to the negative effects of a formal school registration process, while other research points to the positive effects. However, the literature appears to be united on the importance of the School Administrator's function as a key person within the process of formal school registration. Yet, no research data could be found which precisely linked the beliefs of School Administrators to the relationship between school improvement and formal school registration.

Lastly, the literature review highlighted that while there were studies which had investigated related aspects of formal school registration, there were no linear measures

used in any research relating to school registration and school improvement. All of the studies were qualitative or, if they did have a quantitative component, non-linear measures based on True Score Theory were used. The challenge to find an objective measure within the school improvement and school registration debate leads this present study to consider a Rasch-created linear scale of measurement in relation to the registration criteria used in Western Australia. This has not been done before and will thus serve to advance new knowledge.

In the next chapter the Conceptual Framework of the present study is presented.

CHAPTER THREE

CONCEPTUAL FRAMEWORK

In this chapter the conceptual framework, which is embedded within twelve criteria of formal school registration, is presented. First, the chapter begins with an explanation of two aspects of the formal school registration process that concern the beliefs of school administrators, namely; (1) change and formal school registration; and (2) accountability and formal school registration. Next the chapter outlines the twelve criteria and standards used in formal school registration and any expected inter-relationships between them. It anticipates that the criteria will correlate and provides an explanation for why those inter-relationships might occur during the formal school registration process.

Following this, the chapter explains the rationale for seven context or independent variables and their expected influence on the beliefs of school administrators regarding the relationship between school improvement and formal school registration. The following seven context variables are described: (1) school location; (2) school size; (3) school type; (4) administrator gender; (5) administrator age; (6) administrator seniority; and (7) student gender.

Next, the chapter describes the questionnaire used to examine the beliefs of school administrators. It identifies the progressive levels of difficulty for items, responses and perspectives within study questionnaire. Then the rationale and anticipated ranking of School Administrator's Beliefs that Actual and Expected School Improvements were due to the Formal School Registration Process are explained. Next an explanation is given of the interviews to be held with school administrators. The

chapter concludes with the seven main research questions that can be answered in the present study.

Change and Formal School Registration

Studies by Fullan (2008) and Hargreaves and Shirley (2008), have shown how change is difficult to achieve when those most affected by it feel alienated, or have little understanding about why change is necessary. Similarly, change implemented in a ‘top down fashion’ is likely to be met with resistance (Fullan, 2008). This is more likely to be true in countries like the USA and Canada, but maybe less so in China and perhaps Western Australian where the Government of Western Australia introduced a new formal school registration process by law in 1997 in a ‘top down fashion’.

In 1997, when the Government of Western Australia first introduced the prospect of a new formal school registration process, it did this in conjunction with the redrafting and adoption of a new School Education Act of 1999. The government claimed that the previous Education Act of 1928 was out-dated and unable to meet the demands of a “modern educational system” (Barnett, 1997). Subsequently, the government’s rationale, or justification of a new school registration process, became embedded within a perceived need to redraft the Education Act of 1928 (Government Notice, 1994). It would appear that the government’s understanding of change, in this case, was determined by the mandate to create a new law to govern education in Western Australia.

A review of Government publications and media statements issued at that time reveals no mention of the need to introduce a new formal school registration process. Likewise, although the government had consulted with representatives from the non-government schools during the redrafting of the Education Act of 1928 (Education Act

Review, 1997), it received no request from the non-government schools to change the formal school registration process. As it was, the introduction of a new formal school registration process took place without a public explanation and no collective agreement between the Government and non-government schools. In the absence of an accepted rationale to explain and justify this change, the prospect of obstruction and resentment to change could be heightened, as suggested by Fullen (2008), but this didn't seem to occur in this case. As a result of this situation, without suggesting a causal relationship, it is possible to consider that some school administrators may believe that no school improvements were due to the new formal school registration process.

Accountability and School Registration

Although the Government of Western Australia did not explain the need for a new formal school registration process, it did highlight its accountability regarding the education of students in non-government schools (Barnett, 1997). In particular, the government determined its accountability in terms of the ownership of funding grants that were allocated to non-government schools. Studies by Hill, Lake, Celio, et al., (2001) suggest that accountability is established through an understanding of ownership. They suggest that the ownership medium, such as a government loan or grant, will shape the beliefs of those involved regarding the relationship between two parties. This also seems to describe the relationship between the Government of Western Australian and non-government schools, as determined by the formal school registration process.

In a published statement regarding the new School Education Act of 1999, the Government of Western Australia acknowledged its accountability and responsibility to ensure access to a high quality education as a fundamental right of all the children in Western Australia (Barnett, 1997). However, in regards to the Government's

accountability for students in non-government schools, this accountability was defined by the government's ownership of funding grants allocated to non-government schools. Parliamentary debates held during the Second Reading of the School Education Act of 1999 indicate that the formal school registration process for non-government schools was to function as a financial accountability mechanism (Government of Western Australia. Hansard, 1998, p. 4335). The government stated that it would ensure a high quality education for students in non-government schools by the proper expenditure of funding grants that are allocated to non-government schools (Government of Western Australia. Hansard, 1998, p.4443). The resulting relationship between the Government of Western Australia and non-government schools, as experienced through formal school registration, seems to have been determined on the basis of ownership of funding grants and not the right of a student to access a high quality education.

The suggestion that access to a high quality education can be equated with the government's ownership and its financial accountability of funding grants in non-government schools is not well supported in the literature. In studies by Kane and Staiger (2002), and Newmann, King, and Rigdon (1997), school administrators acknowledged the importance of school funding, but say that quality education is not dependent on government funding grants. School funding is but one aspect contributing to school improvement (Carnoy & Siskin, 2003) and quality of teaching is another (see Hattie, 2012). It would seem unlikely that some school administrators in some high profile non-government schools will identify all school improvements as due to formal school registration, even when the Government of Western Australia has linked together the ownership of funding grants and formal school registration as a financial accountability measure. It would appear that the government's understanding of change here was that government funding was most important in ensuring education

quality and accountability in registering non-government schools (and that this was related to votes for the government).

The Twelve Criteria and Standards

The legislated requirements for the registration of non-government schools, as outlined in the School Education Act of 1999 of Western Australia (Part 4, Sec. 159/160) are defined through the twelve assessment criteria that are used during the formal school registration process. These requirements are further recognized in a number of specific standards (see Table 3.1). There are three features regarding the registration criteria and standards that have relevance in regards to the beliefs of school administrators.

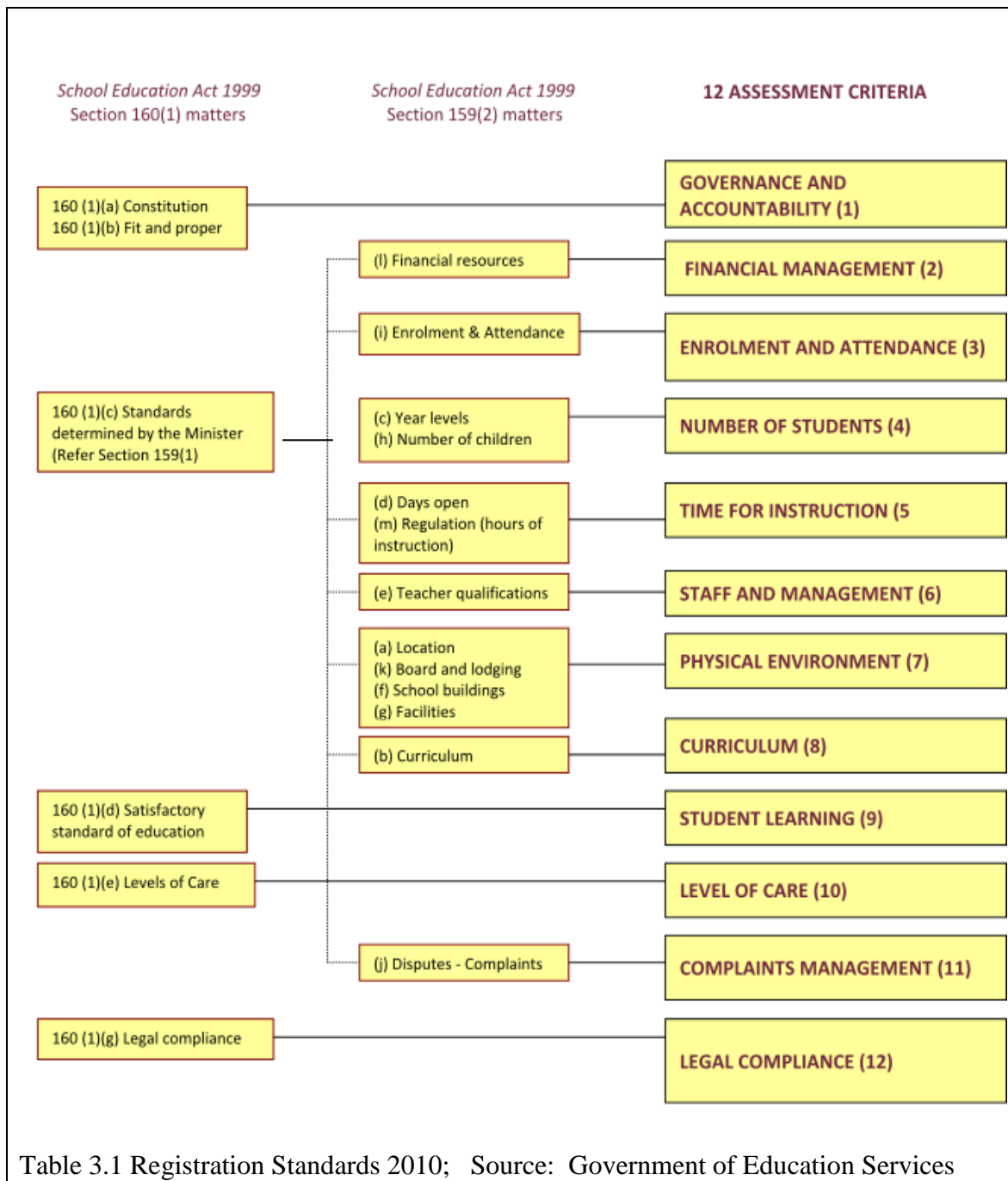
First, the School Education Act of 1999 states that the Minister of Education is to consult with, and take into account the views of, three parties namely: (1) the Director of Catholic Education in Western Australia; (2) the Association of Independent School of Western Australia (Inc.); and (3) any other person or body who is able to make a useful contribution in relation to the standards that are to be determined (School Education Regulations 2000, Sec.131). Further, the Act makes clear in Sections 159, (1)(m) and 160, (1)(c) that the Minister of Education has unrestricted authority to change the standards of each criterion related to the formal school registration process (WA Government, 2001). The Government stated that this unrestricted authority was necessary to facilitate the Minister of Education's ability to meet the changing needs of education (Hansard, 1998, p.4429, Barnett, 1997). In addition, it was stated by the Government, that in the event of an unresolved conflict between the Minister of Education and non-government schools regarding the criteria and standards, non-government schools would need to seek legal counsel and could address the matter

through legal representation. Consequently, it is suggested that the school administrators' belief of an impartial and fair school registration process underpins the assessment process for schools seeking formal school registration.

Second, the requirements of the twelve criteria and subsequent standards that are assessed during the formal school registration process have an exclusive character (Department of Education Services, 2010). Although linked together to facilitate the assessment process of non-government schools seeking formal school registration, each criterion and standard is considered to be unique (see Table 3.1). The requirements of each criterion and each standard is assessed through specific and independently observable and measureable units, as outlined in the Department of Educational Services' School Registration Instructions (Department of Education Services, 2010). As a result, the formal school registration process is a compartmentalized or a tick-the-box assessment process attempting to assess the requirements and standards of formal school registration.

Contrary to the implied independent, or exclusive character, of the criteria and standards that are used during the formal school registration process, studies completed by Rallis and Goldring (1993) suggest that schools are characterized through a series of multiple inter-relationships. The inter-dependent character and circumstance of each criterion are not explained in the government's documents though. Although absent from the independent measureable and observable requirements that are assessed through the formal school registration process, the non-government schools would be expected to experience the inter-relationships between the criteria and standards of formal school registration. The inter-relationships between and amongst the criteria and standards of formal school registration are a part of school administrators' beliefs.

Table 3.1: Legislated Requirements for Non-Government School Registration



Source: Department of Education Services, 2010, p.4

A third feature of the twelve criteria and the standards that are used in the formal school registration process concerns the importance of each criterion. The acknowledgment of a possible difference between the criteria and standards is not

recognized within the formal school registration process (Department of Education Services, 2012). Neither the School Registration Instruction Booklet as issued by the Department of Education Services, nor Government publications and media statements, highlight any differences in school improvement between the twelve criteria (Department of Education Services, 2012). Implied within the formal school registration process is the assumption that each criterion and standard is of equal importance for the education of students in non-government schools. In non-government schools, however, the importance of each criterion, or standard, may be viewed differently. In particular, due to a unique educational philosophy, such as in Steiner Education Schools, Remote Aboriginal Schools and Montessori Schools, for example, School Administrators are expected to differentiate the criteria and standards. School Administrators in such schools are more likely to believe that the requirements of the Curriculum (Criterion Eight), Student Learning Outcomes (Criterion Nine) and School Staff (Criterion Six) will be the most important.

Although unproven, in contrast to the most important criteria and standards, due to legislative directives that are issued by the Minister of Education, School Administrators at non-government schools are likely to consider Instructional Time (Criterion Five) as the least important criterion. School Administrators may have little control over this criterion.

Figure 3.1 shows how the twelve criteria might be investigated and possibly recognized as having differing levels of importance during formal school registration.

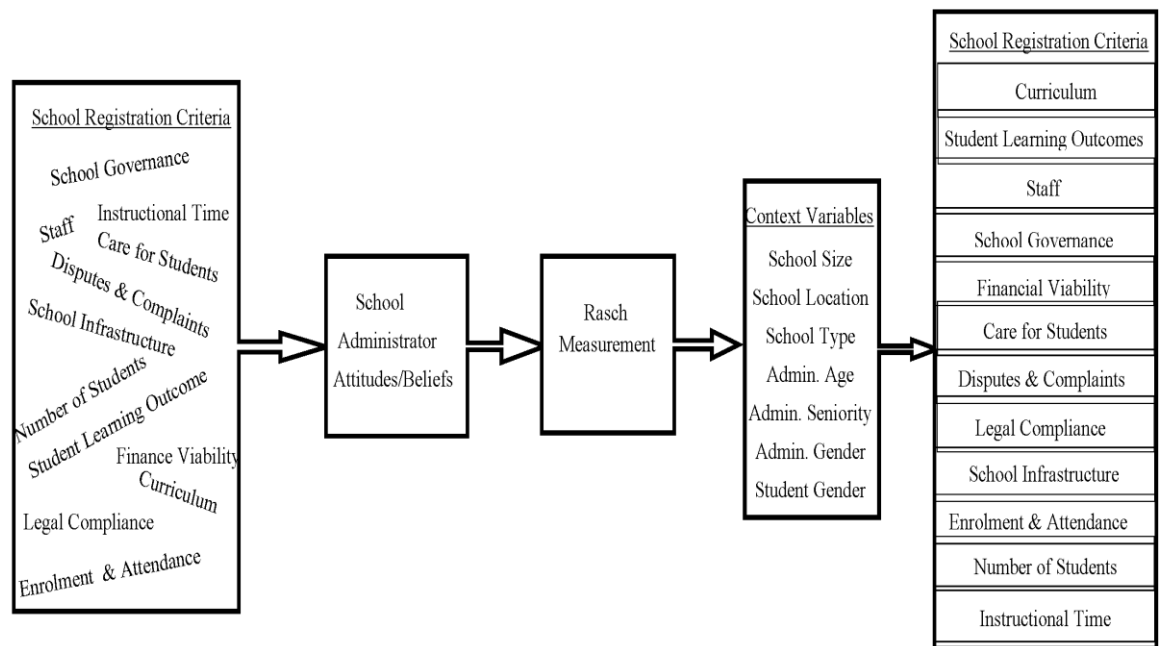


Figure 3.1 Model for the Study of School Administrator Attitudes regarding School Registration Criteria

Source: Created by Harm Witten (2010)

Two Conditions Describing Inter-Relationships between Twelve Criteria

As indicated previously, the requirements of the twelve criteria are expected to be inter-dependent and form a number of inter-relationships. Two general conditions that are unique to non-government schools describe these inter-relationships between the measureable and observable requirements of the twelve criteria of formal school registration. First, non-government schools tend to be alike in their commitment to a particular educational philosophy or ethos (Purkey & Smith, 1983; Wilson, 1985; Davies, 2004)). As a result of this, non-government schools will attract and employ staff (Criterion Six) that share a similar commitment to a particular educational philosophy (Criterion Eight). This unified sense of commitment and purpose, that is uniquely characteristic of many non-government schools with a specific educational philosophy, or an ethos, linked to a particular religious persuasion, is likely to concentrate the beliefs of school administrators regarding school improvements

connected to the inter-relationship between the requirements of School Staffing (6) and School Curriculum (8).

Second, non-government schools tend to be alike in their enrolment tuition-fee procedures that require parents to make a financial payment for their child's education. Regardless of the different tuition fees that are set by various non-government schools, this parental support for a child's school is a key aspect of non-government schools (Wise & Darling-Hammond, 1982, Carnoy & Siskin, 2003). Consequently, non-government schools are likely to focus on the combined requirements of School Governance (Criterion One) and School Finance (Criterion Two). Non-government schools seeking formal school registration will demonstrate financial skills and expertise required to satisfy the requirements of formal school registration criteria. School Councils at non-government schools will experience this inter-relationship when they manage and review the requirements associated with funds received from parents.

Although it would be possible to highlight additional inter-relationships, to avoid unnecessary repetitions of similar explanations for each inter-relationship, what follows is a description of three inter-relationships between the twelve criteria used during the formal school registration process.

An Inter-Relationship between Care for Students and Disputes & Complaints

Without suggesting a causal relationship, the beliefs of school administrators in non-governments schools may indicate that there is a highly positive inter-relationship between the Care for Students (Criterion Ten) and Disputes & Complaints (Criterion Eleven). This is due in part to the following three factors. First, the intent of Criterion Ten, which is to ensure that non-government schools have policies and procedures to provide students with a safe environment where they feel physically and emotionally

secure, is supported by Criterion Eleven, which requires that non-government schools have policies and procedures to ensure the protection of complainants during unresolved disputes and complaint situations (Department of Education Services, 2010). Although there is a difference between these two criteria, both serve the same purpose to ensure a child's well-being. Second, since parents of non-government school have made a financial payment for their child's education, and are able to re-consider their child's enrolment, School Administrators in non-government schools would regard a dispute and complaint as an urgent matter that needs to be resolved quickly and efficiently. This kind of 'customer-is-king' relationship between School Administrators and parents heightens the sense of obligation related to these two criteria. Third, many non-government schools have, as part of their ethos, the value of kindness and care for others. Non-government schools that promote such social virtues are expected to consider an un-resolved dispute, or complaint, as a potential threat to the well-being of a student or parent. Hence, this inter-relationship is underpinned by the beliefs of school administrators' who join together the intent of Criterion Ten and Criterion Eleven.

Inter-relationship between School Curriculum and Student Learning Outcomes

Concerning the requirements of School Curriculum, School Administrators at non-governments must be able to show that a planned and structured curriculum has been coordinated and organized for all students. The purpose of this criterion is to confirm that the instruction provided to students is aimed at ensuring each student's successful transition from school. In support of the aim of this criterion, School Administrators at non-government school must also ensure that student learning has achieved a satisfactory standard. Thus, Student Learning Outcomes (Criterion Nine) function as a safety net, or an insurance measure, to guarantee that the requirements of

the School Curriculum criterion have the desired results. However, although a non-government school may have a solid curriculum in place, that doesn't automatically mean that the students of non-government schools will benefit from a planned and structure curriculum (Hattie, 2009). Hence, through an added focus on Student Learning Outcomes (Criterion Nine) creates an inter-relationship between it and School Curriculum since the improvement of both learning and teaching is present in both criteria. While, these requirements are independently assessed in the formal school registration process, they are inter-dependent and are expected to be positively correlated.

An Inter-relationship between School Governance and School Staff

In regards to the inter-relationship between School Governance (Criterion One) and School Staff (Criterion Six), although there may be other factors that might influence a correlation between them, good school governance as practiced through effective staff recruitment, staff performance appraisals and school staffing policies, would be expected to account for a positive correlation between them. The requirements of the standards for these formal school registration criteria point to a joint responsibility between the School Council and Principal regarding the standard of education offered to students (Department of Education Services, 2010). In particular, when School Councils at non- government schools appoint a new principal, or senior management staff, and conduct an appraisal of their work, then the link between the requirements of School Governance (Criterion One) and School Staff (Criterion Six) is created. Good school governance is likely to attract and foster a good school staff (Leithwood, 2007). While separated in the assessment requirements for school governance and management, as recognized in formal school registration, it is difficult

to isolate their intent to ensure that the standards of education are maintained. School Administrators are likely to believe that a positive inter-relationship is in part due to the connection between the criteria used in formal school registration and school improvements that were due to the formal school registration process.

The Influence of Context Variables on Formal School Registration

Seven context, as independent variables, are considered in regards to the beliefs of School Administrators that school improvements could be due to formal school registration namely, (1) school location; (2) school size; (3) school type; (4) administrator gender; (5) administrator age; (6) administrator seniority; and (7) student gender. These context variables relate to the personal circumstances, or school situation, of School Administrators at non-government schools. What follows is a description of these context variables and their relation to the formal school registration process.

School Location

Non-government schools in Western Australia are divided into three locational categories namely: metropolitan schools in Perth (1); regional schools (2); and remote schools (3). The influence of school location on the beliefs of School Administrators is expected to be a factor of the school's ability to access support services and resources. By virtue of their isolated location, schools in remote, or regional areas, would be expected to have access to fewer resources and services than schools situated within urban metropolitan centres (Harris, A., James, S., Gunraj, J., & Clarke, P., 2006). School Administrators at regional, or remote schools, are likely to experience more difficulty in meeting the requirements of the criteria used during formal school registration. In a media statement issued by Australia's Federal Minister of Education,

Hon. Mr. Peter Garrett, the locational difference between metropolitan and remote schools was highlighted (Garrett, 2012). Metropolitan school administrators are expected to experience less difficulty in meeting the formal school registration criteria. Consequently, it is also possible that metropolitan School Administrators would be less likely to indicate that school improvements were due to the formal school registration process.

School Size

The categories describing school size are determined on the basis of student enrolment. Non-government schools with less than one hundred students are considered to be small and those with five hundred or more students are listed as large schools. The relevance and significance of school size is closely allied to the benefits derived through a possible economy of scale benefit for larger schools (Leithwood, 2009; Stiefel, Berne, Iatarola et al., 2000). With more students and staff present, it is suggested that larger schools will have more administrative staff available and be able to assist School Administrators in meeting the requirements of formal school registration better. As a result of this larger staffing situation in schools with larger numbers of students, School Administrators at those schools would be expected to experience less difficulty in meeting the requirements of the formal school registration criteria. Consequently, it is also more unlikely that School Administrators in larger schools will highlight school improvements that were due to formal school registration.

School Type

The following school type categories are outlined namely: Primary (1); Middle (2); Secondary (3); and K-12 Schools (4). Although each school type will have a varying number of distinctive features (Lubienski, Lubienski, & Crane, 2008; Lee,

Dedrick & Smith, 1991), it is the lack of administrative staff in most primary schools that would be expected to impact on formal school registration most. And, as previously indicated regarding school size, with fewer administrative staff available to assist during formal school registration, it is anticipated that primary School Administrators will experience more difficulty in meeting the requirements of the criteria used during the formal school registration process. Consequently, primary School Administrators are more likely to believe that school improvements would be due to the formal school registration process.

Gender

Although research has identified gender differences in leadership styles and behaviour (Burke & Collins, 2001), it is probable that male and female school administrators could share similar beliefs regarding the formal school registration process in Western Australia. Without suggesting a causal relationship, the structured character of the formal school registration process will negate any gender influence on the beliefs of school administrators. Recent studies by Trinidad and Normore (2005) highlight a genderless approach to leadership in school improvement. It is expected that there will be no difference between the beliefs of male and female school administrators regarding the relationship between school improvements and the formal school registration process.

Age

The ages of the school administrators in this study were divided into five separate age groups set at a five year interval. Beginning with the ages twenty-five to thirty and concluding with school administrators who are older than fifty, it is possible that the beliefs of school administrators are influenced by age. Studies by Murphy and

Johnson (2011) and Leithwood and Jantzi (2005) examining age differences suggest that younger school administrators will more readily adapt to the changes brought on by the formal school registration process. However, due to the structured character of the formal school registration process, no significant age influence, or advantage, will be attributed to younger or older school administrators' beliefs (Dimaggio & Powell, 1983). Both younger and older school administrator are likely to have beliefs that will identify school improvements due to formal school registration.

Seniority

In the present study, it is anticipated that a school administrator's seniority will influence the beliefs of school administrators. In particular, it is suggested that school administrators with little seniority will experience more difficulty in meeting the requirements of the formal school registration process. This assumption, which is supported by the work of Leithwood and Jantzi (2005), suggests that least experienced school administrators are more likely to believe that school improvements have occurred due to the formal school registration process.

Student Gender

The following student gender categories in non-government schools were identified in this study, namely: Co-ed (1); Girls only (2); and Boys only (3). As indicated by Riordan (1991), historically, coeducation has been perceived as being more economically efficient resulting in a schools consisting of boys and girls, especially in government schools, but also in non-government catholic schools. This has not been the case in other non-government schools which are most often, but not always, geared towards single gender schools. The absence within the formal school registration of any specific requirements addressing single gender schools is noted. While it is suggested

that the formal school registration process is geared towards coeducation, it is expected that the beliefs of school administrators will be unaffected by student gender in non-government schools in the present study.

An Explanation of the Study Questionnaire

A questionnaire was developed to collect and examine the beliefs of non-government School Administrators regarding the actual and expected school improvements that were due to the formal school registration process. Via this study questionnaire, School Administrators were requested to consider a total of sixty items that are recognized as standards which relate to the twelve criteria used during the formal school registration process (Department of Education Services, 2010). The sixty items consisted of twelve groups of five items or standards that were selected from each of the criterion. The five items for each of the criterion were taken directly from the formal School Registration Instructions Booklet, as issued by the Department of Education Services (Department of Education Services, 2010). Using the prioritized order of the standards as compiled by the Department of Education Services, the items in the questionnaire were conceptually ordered from easy to hard by Harm Witten for this study.

Table 3.2 (see below) shows the order of the easy to hard items regarding the requirements of Instructional Time (Criterion Five) as they relate to the formal school registration process. Item one is listed as the easiest item since it obliges School Administrators to adhere to the clearly prescribed requirements of the School Education Act of 1999. School Administrators will have no choices regarding the requirements associated with the criteria. By contrast, item five is considered to be a harder item due to its unpredictability. School Administrators would have very little control of this

situation. Consequently, this will be a difficult item for School Administrators to improve. A similar order of easy to hard items was listed for the requirements of each formal school registration criteria.

Table 3.2 Easy to Hard Items on Instructional Time (Criterion Five)

	#	Item
Easiest	1	The school's compliance to the legal requirements.
Easier	2	The daily instructional times at school.
Easy	3	The number of school days within the school's yearly calendar.
Hard	4	The school's extra-curricular events supporting instructional times.
Harder	5	A reduction in the number of disruption at school.

Source: Created by Harm Witten, 2010.

In the questionnaire, School Administrators were asked to answer each item in two perspectives, namely, 'what I expect to happen' (easy) and 'what actually happened' (harder). It is easy to expect some school improvement due to formal school registration because there is a common public belief that this is why the government is implementing the new registration procedures, but it would be harder to say that any school improvement was actually due to the formal registration process, because other factors influence student and school improvement besides formal registration such as teacher quality.

School Administrators were asked to respond to each item via each perspective in one of the following four ordered response categories; (1) no improvement due to formal school registration; (2) improvement but not due to formal school registration; (3) some improvement due to formal school registration; and (4) significant improvement due to formal school registration. By way of the two perspectives and the four response categories, the questionnaire was able to incorporate the degrees of difficulty associated with the beliefs of school administration and the criteria used during the formal school registration process (see Waugh, 2003, 2005, for examples of

this measurement idea in other contexts). This is based on an understanding that first, it is easier to believe that something (e.g. a school improvement) might happen, as indicated by the first perspective, ‘what I expect to happen’, than it is to believe that something (e.g. a school improvement) has actually happened (Fischhoff, 1975, Waugh, 2005). Secondly, the response categories are ordered in relation to the amount of improvement due to formal registration from none (no improvement), to some improvement due to formal school registration, and then to a great deal of improvement due to formal school registration.

Table 3.3 shows the horizontal and vertical directional expected levels of difficulty for the items of School Governance (Criterion One). Concerning the requirements of this criterion, due to practical aspects of a School Council meeting, item one is listed as being easiest. In contrast, due to an abstract or conceptual requirement, item five is considered to be the most difficult school improvement item. As indicated by the blue arrow there is a theoretical progression from easy to hard for items, response categories and the two perspectives.

Table 3.3 School Governance Questionnaire

Item	Registration Standard	No improvement due to school registration (easier)	Improvement but not due to school registration (easy)	Some improvement due to school registration (hard)	Significant improvement due to school registration (harder)
1	The efficiency of School Council meetings.	Expected to happen (easy)	Expected to happen (easy)	Expected to happen (easy)	Expected to happen (easy)
Easiest		Actually happened (hard)	Actually happened (hard)	Actually happened (hard)	Actually happened (hard)
2	The School Council's appointment and review of management staff.				
Easier					
3	The School Council's community and public relations.				
Easy					
4	The expertise and skills of School Council members.				
Hard					
5	The School Council's understanding of the distinction between governance and management.				
Harder					

Source: Created by Harm Witten (2010)

The study questionnaire interconnects closely with Guttman scale requirements to be used in the present study. In Guttman scales, the items are ordered from easy to hard such that persons answering the hardest item positively, answer all other items positively. Person answering the hardest item negatively, but the second hardest item positively, answer all the other easier item positively, and so on in a step like formation.

This is a non-linear measure with an ordered set of item by difficulty. The predicted item difficulty order for School Governance, as given in Table 3.3, will be tested through Guttman scales (Guttman, 1944) in later chapters. The predicted item difficulty order can be compared to the actual measured item difficulty order, as in a Science experiment and this is a powerful way to test for the construct validity of the variable.

A table of predicted item order for all the other eleven criteria was developed for each of the other eleven formal registration criteria but they are not presented here to avoid too much repetition. These item difficulty orders are tested through Guttman scales in later chapters.

School Administrators' Beliefs that Actual and Expected School Improvements Were Due to Formal School Registration

The reasons to explain the different beliefs of School Administrators will vary; however, four general explanations can be highlighted. First, it is anticipated that School Administrators will more readily identify any actual or expected school improvements items that were due to formal school registration when such items are very clearly defined and legislatively prescribed criteria. School Administrators are more likely to already have improved, and therefore find it easier to identify, the items on school improvements related to the requirement of Legal Compliance (Criterion Twelve). Due to the absolute and mandatory nature of this criterion, School Administrators will know exactly what needs to be improved in order to comply with the requirements of this criterion.

Second, it is expected that due to the changing situation of a number of criteria, School Administrators are more likely to identify any actual or expected school improvements items associated with criteria that have been changed. School

Administrators may believe that items or school improvements in School Curriculum (Criterion Eight) will be easy to identify due to the recent introduction of a new Australian Curriculum (ACARA, 2011). Similarly, it is probable that the changing standards in Student Learning Outcomes (Criterion Nine), as brought on by the introduction of a National Assessment Plan for Literacy and Numeracy, may cause School Administrators' to find that it is easy to identify school improvements that were due to formal school registration.

Third, School Administrators are likely to believe that it will be hard to identify actual or expected school improvements items due to formal school registration, if those school improvement items in any way concern matters related to a school's ethos or reason for being. In a sense, the requirements of these criteria speak to the heart of why many non-government schools exist and what it is that they do well. Therefore, due to the high level of individual care for students in many non-government schools (Choy, 1998), School Administrators at non-government schools may be more likely to believe that it will be hard to identify school improvements regarding the Care for Students (Criterion 10) and Disputes & Complaints (Criterion 11).

Fourth, School Administrators may believe that it is hard to identify actual or expected school improvements items that were due to formal school registration, when such items or school improvements concern requirements that are directly related to the assessment of their own work as School Administrators. It is expected that School Administrators will be reluctant to express a belief that their own work requires improvement. This situation highlights a subjectivity risk in questionnaire items that concern personal beliefs about a personal situation. This is a basic conflict of interest situation wherein School Administrators will find it hard to identify school

improvements dealing with the requirements of School Governance (Criteria One) such as the appointment and review of management staff.

Tables 3.4 and 3.5 show the predicted easy to hard order of school improvement items for Student Learning Outcomes (9) and Care for Students (10) as indicative of the easy to hard order for the twelve criteria used during formal school registration.

Reasons for the order of school improvements items will vary and include the four explanations previously outlined.

Table 3.4 Predicted Order of School Improvement Item Difficulties for Student Learning Outcomes (9)

Item #	School Improvement Item	Predicted Order
1	The school's policy and procedures for student assessment	Very Easy
2	The school's use of external test, e.g. NAPLAN	Easy
3	The school's expectations and standards for student learning.	Hard
4	The school's learning program for talented and gifted students.	Hard
5	The school's learning program for students at risk.	Very Hard

The predicted order of easy to hard school improvement items for Student Learning Outcomes (9) in Table 3.4 reveals an anticipated progressive level of difficulty. Item One is predicted to be a very easy, primarily due to the School Administrators' control of school policy and procedures. School assessment policies and procedures are usually set and controlled by School Administrators and function as authoritative statements to guide the assessment of students. School Administrators may believe that it is easier to change or improve a policy and procedure, than it is to actually change or improve the assessment behaviour and attitude of a staff at school. A similar reasoning applies to Item Two, although the School Administrator will have

somewhat less control of assessment policy and procedures that involves an external assessment of students.

In Table 3.4 school improvement Item Three is progressively more difficult to achieve due to its complexity and a diminished level of control by the School Administrators. While School Administrators can formulate and publish the school expectations and standards, the actual interpretation, understanding and application of those expectations and standards may be hard to achieve.

Due to a wide range of issues, Items Four and Five are predicted to be hard and very hard respectively. It may be difficult for School Administrators to acquire the services of staff that are highly trained and qualified. In addition, the needs of students considered in a talented and gifted program may vary significantly. Likewise the needs of students at risk may be complex and beyond the immediate resources of school administrators. These factors related to this criterion may cause School Administrators to believe that these are hard and very hard school improvement items.

Table 3.5 Predicted Order of School Improvement Item Difficulties for Care for Students

Item #	School Improvement Item	Predicted Order
1	The management and storage of student records at school.	Very Easy
2	The procedures to ensure internet safety.	Hard
3	The student behavior management at school.	Hard
4	The school's emergency-crisis response policy and procedures.	Easy
5	The school's pastoral care program.	Very Hard

Table 3.5 shows the prediction that School Administrators will find that the management and storage of student records at school is a very easy school improvement

item. This item, which is considered to be a straightforward practical matter, relates to the School Administrators' direct supervision of student records. Hence, it will be considered to be a very easy item to improve. Similarly, Item Four is also predicted to be easy due to the School Administrators' immediate control of policies and procedures at school.

School Administrators are likely to find it hard to improve a school improvement item which ensures internet safety. Advances in computer technology will cause School Administrators to find it difficult to ensure internet safety. It is probable that students may circumvent a school internet safety system. Similarly, due to the volatile and unpredictable nature of student behaviour, Item Three will be a difficult item. Regarding Item Five, in view of a wide range of ever increasing and complex social issues surrounding students, the school's pastoral care program is predicted to be a very hard item.

All the items in the questionnaire were given a predicted order by difficulty and the difficulty order will be tested with Rasch measurement (and Guttman Scales). The study questionnaire thus interconnects closely with the Rasch measurement requirements to be used in the present study. Since Rasch measurement calculates the item difficulties and person measures on the same scale, it will be used to create a unidimensional linear scale to measure the beliefs of School Administrators regarding the twelve criteria of formal school registration in relations to the standard of education for students enrolled in non-government schools. The predicted item difficulty order for School Governance (Table 3.3), School Learning Outcomes (Table 3.4), Care for Students (Table 3.5) and all the other criteria (not ordered here in tables to avoid too much repetition) will be tested through a Rasch scale (Rasch, 2010; Andrich, 1988a,

1988b) in later chapters. The predicted item difficulty order can be compared to the actual measured item difficulty order, as in a Science experiment, and this is a powerful way to test for the construct validity of the variable. A careful description of Rasch measurement is presented in the next chapter.

An Explanation of Study Interviews

Data collected during interviews can provide a richer contextual framework and insight into varying research situations than that provided by Rasch or Guttman scales (Punch, 2005). The goal of an interview is to provide the researcher with a deeper understanding of the beliefs of the study participants (Bell, 2005; Punch, 2005). It is anticipated that the interviews conducted in this study will reveal three outcomes. First, it is expected that the interview data will reveal the emotional state or the feelings of School Administrators with regards to the formal school registration experience. It is important to appreciate and recognise any anxiety or stress which is experienced by School Administrators during the assessment of school within the formal school registration process. Such data may uncover new issues related directly or indirectly to the formal school registration process. Second, it is expected that the results of the interviews will clear up any questions which have arisen during the data analysis of the study questionnaire. The data analysis of these interviews answers the seventh research question of this present study; what beliefs do school leaders have regarding school improvement and formal school registration that are not addressed by the twelve formal school registration criteria?

Third, data collected by means of from an open-ended interview question may highlight new aspects regarding the relationship between school improvement and formal school registration. It is possible that interview data may include personal

information which otherwise would have remained hidden and unknown (Learmonth, 2006). Therefore the following open-ended question will be shared with school administrators; *Can you suggest how the formal school registration process might be improved?* While this question does not directly relate to the criteria used in formal school registration, it does create an opportunity to gain data that will provide a deeper understanding of School Administrators' beliefs concerning this situation.

Questions to be Answered

This chapter leads to seven main questions to be answered.

1. Can a linear, unidimensional scale be constructed using a Rasch Measurement Model to measure the Beliefs of School Administrators that Actual School Improvements Were Due to Formal School Registration and contain items concerning twelve criteria used during the formal school registration process of non-government schools?
2. Can a linear unidimensional scale be constructed using a Rasch Measurement Model to measure the Beliefs of School Administrators that Expected School Improvements Were Due to Formal School Registration and contain items concerning twelve criteria used during the formal school registration process of non-government schools?
3. Are there inter-relationships between and amongst the twelve criteria used during formal school registration, such as between: School Governance (criterion1) and School Staff (criterion 6); Care for Students (criterion 10) and Disputes & Complaints (criterion 11); and School Curriculum (criterion 8) and Learning Outcomes (criterion 9)?

4. Are the beliefs of School Administrators regarding school improvement due to formal school registration influenced by their personal and school circumstances, namely: (1) school location; (2) school size; (3) school type; and (4) administrator seniority?
5. Will the beliefs of School administrators identify school improvements due to formal school registration that are very easy, moderately easy, hard and very hard ?
6. Can non-linear Guttman scales be created for each of the twelve criterion of formal school registration and are these consistent with the Rasch-created linear measures?
7. What attitudes do School Administrators have regarding school improvement and formal school registration that are not addressed by the twelve formal registration criteria?

The next chapter discusses Rasch Measurementt which is used in the present study.

CHAPTER FOUR

MEASUREMENT

This chapter begins with a consideration of the theory of measurement. It describes True Score Theory (sometimes call Classical Test Theory) and the difficulties researchers encounter when it is applied in the field of educational psychology. It does this by highlighting five requirements needed to create a linear measurement scale. In particular, this chapter will contend that the Rasch Measurement model is better equipped to create a linear, objective measure of beliefs and attitudes held by School Administrators. Two of the Rasch Measurement models, the Simple Logistic Model and the Extended Logistic Model are presented. Next, the chapter describes the computer program RUMM 2030, (Andrich, Sheridan, & Luo, 2010) that is used in this study. The chapter concludes with an explanation of Guttman Scaling and the reason for its inclusion within this study.

Measurement Theory

The challenge to ‘get it just right’ is one way to describe the evolution of measurement within the field of educational psychology. It depicts a journey made by researchers who have struggled to develop a measurement scale capable of transforming the properties of scale types and an acceptable statistical operation with empirical data (Berka, 1983). Beginning in 1928 with the Thurstone scale, the first formal technique for measuring an attitude, and moving onto the Likert and Guttman scales, developed respectively in 1932 and 1944, it was in the 1950’s that a Danish mathematician, George Rasch created a mathematical model that could approximate the values of ordinal scales to metric scales (see Rasch, 1960; Andrich, 1988a). This new Rasch Measurement model, whereby it became possible to employ numbers capable of joining

together the attitudes of people to indicators on a continuum, ushered in a new era of measurement for the study of social sciences (Punch, 1998). Contrary to the earlier scale measurements, which were based on True Score Theory (also known in the literature as Classical Test Theory), Rasch highlighted the importance of the relationship between the observable responses to test items and the unobservable traits assumed to underlie responses to items on a test (Hambleton & Swaminathan, 1985; Rasch, 1980/1960, 2010). Known as Item Response Theory, this measurement model exposes the difficulties researchers have traditionally faced with True Score Theory.

True Score Theory

Basically, True Score Theory says that a test score (achievement or attitude) consists of a 'true' score and a random error score and almost any set of items can be used. It is a very popular and simple theory about measurement (Trochim, 2006), but it encounters difficulties when its measurement models, such as Likert scales (Likert, 1932), recognise test scores to true scores rather than item scores to true scores (Wright, 1999). In so doing, rather than create a linear measure of a variable (such as an attitude or belief), True Score Theory has established a ranking of measures (Waugh, 2005; Wright, 1999). Essentially, the difficulty with using total scores as determined through a Likert scale, which is an ordinal rating scale, is that the conclusions drawn from those scores may misrepresent the actual data analysis results. When Likert scales are used, the total item scores and the item difficulties are not calibrated on the same scale, which results in a ranking scale, and not a linear scale. Ranking scales are then mistakenly interpreted as measurement scales (Wright, 1999). Much of the research current within social science continues to ignore this absence of interval data in such scales. Five requirements needed to create a linear measurement scale, which are absent in True

Score Theory, are now outlined in recognition of the preferred Rasch Measurement Model used in this study. It is the contention of this study that the Rasch Measurement model is better equipped to address the difficulties in creating a linear measure for attitudes and beliefs.

Linear Scale Required (1)

In order to establish an accurate measurement scale, the data must be able to be represented in units that are linear. Data formed through True Score Theory does not, however, contain equal units of a measure and is therefore non-linear. Evidence of this situation is noticed in the commonly used Likert scale. Within this scale measurement model of True Score Theory, the total score of a person on all the items of a test (or questionnaire) is comprised of an unobserved true score and a random error score (Chapman, 2007, Keats, 1997a). Applying linear statistical operations on such like non-linear raw scores will result in “distorted results” that are “inferentially ambiguous” (Wright, 1999, p.71). Examining a typically scored Likert response category from ‘Strongly Agree’ valued at 5 to ‘Strongly Disagree, valued at 1, reveals an interpretive difficulty for ‘Neutral’ which is valued at 3. Does the respondent’s ‘Neutral’ relate to ‘Agree’ valued at 4 or ‘Disagree’ which is valued at 2. As highlighted by Wright (1999), simply “counting events does not produce equal units” (p.69), and both Wright and DuBois & Burns (1975) cautioned researchers to recognise non-linear nature of most educational data.

Easy to Hard Order of Items Required (2)

Another requirement which is necessary to form a linear scale concerns the use of items that are ordered in difficulty from easy to hard. Typically the items used to measure the variable regarding the relationship between school improvement and school

registration have followed the Likert tradition, which makes no provision to conceptually order the item difficulty from easy to hard. To date, most researchers investigating the relationship between school improvement and school registration have relied heavily on a mixed method of case studies, interviews, Likert Scales and other rating scales (Brimblecombe *et al*, 1996; Chapman, 2001; Fullan, 1991; Matthews & Sammons, 2004; Ehren *et al.*, 2005; Shaw, 2003; Wilcox & Gray, 1996). In these studies which used Likert-type items, the participants may have considered various statements using a five point response category such as; ('Strongly disagree', 'Sort of disagree', 'Not sure', 'Sort of agree', 'Strongly agree'). The following statements, relating to a study that examined teachers' perceptions regarding the role of school principals during school inspections (Akbaba, 2011), are representative of Likert-type items which have not been ordered according to a level of difficulty, as would be implied in a scale of measures from low to high.

1. It is important that school principals announce inspections in advance.
2. School principals should identify any problems at the end of an inspection.
3. It is important that school principals adopt kindly attitude during inspections.
4. School principals should know when the school inspections will be

conducted. (Akbaba, 2011, p.35)

Easy to Hard Order of Responses Required (3)

To form a linear scale, it is essential to use response categories that are ordered in difficulty from easy to hard. In this manner, it becomes possible to assess whether or not the responses have been answered in a consistent and logical manner. Whenever studies use a Likert-type five point response category which includes a 'neutral' category, such as 'Not Sure', this results in a 'discontinuity in the middle' (Waugh,

2003a, p.78). Neutral categories such as 'Not Sure' become problematic since it is impossible to determine whether there is more agreement between 'Not Sure' and 'Sort of Disagree' or 'Not Sure' and 'Sort of Agree' (DuBois & Burns, 1975; Waugh, 2003a). This uncertainty contributes to the ambiguity of raw scores. This difficulty within the design of Likert-type response categories has nevertheless not deterred the mistaken counting of a total score on the Likert item responses, as if each response is an equal unit of measure.

One Scale for Person Measures and Item Difficulties Required (4)

As indicated previously, True Score Theory generally calculates a total score by simply adding up the scores on the test items. However, to make a linear scale, which will provide for an accurate analysis of two variables (e.g. school administrator beliefs regarding the relationship between school improvement and school registration), it is necessary that the person measures be calibrated on the same scale as the item difficulties. Essentially, both must be presented as a linear scale of difficulty and a linear scale of the person measure together on the same scale. This requirement is simply not satisfied through the True Score Theory which does not consider the difference in item difficulty in conjunction to the person measures.

Scale-Free Scores and Sample Free Items Required (5)

To create a reliable linear measurement scale, it is necessary that the difference between participant measures and item difficulties are sample-free and able to fit a measurement model like Rasch (1980/2010). Although this difference is not present in traditional True Score Theory, it is possible to recognise such a difference on a unidimensional measure, such as one that fits the Rasch measurement model. When standard units of measurement are assigned across the complete continuum, it is

possible to review data and ensure that the participants are consistent in the way in which they respond to items. In the Rasch measurement model, the standard unit of probability is logits, that indicate the ‘log odds of successfully answering the items’ (Andrich, 1988; Waugh, 2006, p.1).

Summary of Requirements for Measurement

In his review of psychometric and mathematical histories of measurement, Wright (1999, p.100) summarizes five main requirements for linear measures in educational psychology. These are as follows, (1) all measures must be linear in the sense that equal differences between the numbers on the scale must equal the same amount of what is being measured, so that adding, subtracting, dividing, and multiplying can be done with them; (2) item difficulties must be calibrated sample-free; (3) person measures must be calibrated test-free; (4) persons must be able to be measured on the parts of the scale targeted at their attitudes so that other parts of the scale do not affect their measure; and (5) the method should be easy to apply.

The Rasch measurement model meets these five main requirements and has been used in this study to successfully create linear scales. The following section explains Rasch measurement in greater detail.

Rasch Measurement Model

Researchers of educational psychology are increasingly turning to the Rasch Measurement Model for their preferred choice when wanting to create a linear, objective measure. Discovered by the Danish mathematician, Georg Rasch, the Rasch Measurement Model (2010, 1980, 1960) is grounded within Item Response Theory, also

sometimes referred to as Latent Trait Theory. Item Response Theory suggests that unobservable phenomena, such as an attitude or belief, may be measured by making interpretations from what can be observed. This results in the need for a measuring instrument to interpret data and make reliable inferences (Punch, 1998). It is the Rasch models that show how to determine what is measureable on a linear scale, how to determine what data can be reliably used to create a linear scale, and what data cannot be used in the creation of a linear scale (Waugh, 2006, Wright, 1999). When the data fit a Rasch measurement model, scale-free person measures and sample-free item difficulties are mathematically calculated to a linear scale with standard units. The resultant interval data that is shown to fit the Rasch measurement model is verified as reliable and can be used to form valid inferences.

Although there are a number of differing Rasch models of measurement designed to address a variety of situations (see Waugh, 2007), two Rasch models measurement are used in this study. The first, known as the Simple Logistic Model was first published in 1960 (Rasch, 1960) and the second model is the Extended Logistic Model of Rasch (Andrich, 1988b), which can be described as an extension of the Simple Logistic Model. The following paragraphs outline these two models and their use to create a linear scale.

Simple Logistic Model (SLM) of Rasch Measurement

The Simple Logistic Model (SLM) of Rasch has two parameters: one representing a measure for each person on a variable and the other representing the difficulty for each item (Wright, 1999). The equations for the Simple Logistic Model of Rasch are as follows:

Equations for the Simple Logistic Model of Rasch

$$\begin{array}{l} \text{Probability of answering} \\ \text{positively (score 1)} \\ \text{for person n} \end{array} = \frac{e^{(\delta-\beta)}}{1 + e^{(\delta-\beta)}}$$

$$\begin{array}{l} \text{Probability of answering} \\ \text{negatively (score 0)} \\ \text{for person n} \end{array} = \frac{1}{1 + e^{(\delta-\beta)}}$$

Where

e = natural logarithm base (e=2.7318)

δ = parameter representing the measure (ability, attitude, performance) for person n

β = parameter representing the difficulty for item i

These equations are solved from the data (entered in a text format) by taking logarithms and applying a conditional probability routine with a computer program such as RUMM (Rasch Unidimensional Measurement Models).

(Source: Rasch, 1960, 1980, 2010; Andrich, 1988a; Andrich, Sheridan & Luo, 2010)

To solve these complex equations, researchers have increasingly turned to the power of computer programs such as RUMM 2030 (Rasch Unidimensional Measurement Models), Winsteps, or ConQuest. With these programs the researcher is able to quickly, and without a high level of mathematical competency, solve these equations by entering data into the computer in a text format. Once entered, these computer programs will take logarithms and apply a conditional probability function to produce a great deal of statistical and graphical output (Andrich, Sheridan, & Luo, 2010).

The Extended Logistic Model of Rasch

As mentioned in the previous section, the Extended Logistic Model (ELM) of Rasch can be thought of as an extension of the Simple Logistic Model (SLM) from two

response categories to three or more response categories or outcomes (see Andrich, 1988b; Masters, 1988, 1997). Hence, the conditions, requirements and output of the ELM are similar to the SLM, except that there are now more item parameters, more item output and the equations are more complicated. The ELM can be applied to any set of data scored, judged or answered in three or more ordered outcome categories where the level of outcome is conceptualized on a continuum from low to high.

The RUMM 2030 computer program incorporates a sophisticated mathematical procedure that estimates the threshold structure factors when the numbers in some cells are zero or small (not the ordinary factor analysis kind) (see Andrich, & Luo, 2003, pp. 205-221). In this case, the errors will probably be large, as was the case in the present study, even when there was a reasonable fit to the Rasch measurement model.

Equations for the Extended Logistic Model of Rasch

$$\pi_{nix} = \frac{\exp \sum_{j=0}^x (\beta_n - \sum_{j=1}^x \delta_{ij})}{\sum_{k=0}^m \exp \sum_{j=0}^x (\beta_n - \sum_{j=0}^x \delta_{ij})}$$

where π_{nix} is the probability that person n with attitude β_n responds in category x to item i

(Source: Andrich, 1988b)

Using the Extended Logistic Model (ELM) of Rasch with the RUMM computer program, there are eight data analysis tests (output) provided in the creation of a linear, unidimensional scale. This output is similar for the Extended Logistic Model of Rasch

and the Simple Logistic Model (SLM) of Rasch (except that for the SLM there are no ordered thresholds, just one threshold) (Andrich, Sheridan & Luo, 2010; Waugh, 2007).

RUMM 2030 Computer Program Output

In working towards the formation of linear, uni-dimensional scales to measure the attitudes of School Administrators concerning the twelve criteria of school registration in relations to the standard of education for students enrolled in non-government schools, this study analysed the data using the RUMM 2030 computer program (Andrich, Sheridan & Luo, 2010). Through the use of the RUMM 2030 computer program this study was able to demonstrate the following eight data analysis tests (taken from Waugh, 2007 and the RUMM 2030 Manual).

(1) Testing for consistent and logical answers to the response categories.

The RUMM program accomplishes this through the provision of two outputs: first, it calculates threshold values between the response categories for each item (where there are odds of 1:1 of answering in adjacent categories) and, second, it provides response category curves showing the graphical relationship between the linear measure and the probability of answering each response category.

(2) Testing for dimensionality

An item-trait test-of-fit is calculated as a chi-square with a corresponding probability of fit. It tests the interaction between the responses to the items and the person measures along the variable and shows the collective agreement for all items across persons of different measures along the scale. If there is no significant interaction, one can infer that a single parameter for each person can be used to accurately predict each person's response to all the different items along the scale (described by a single parameter for each item) and it is in this sense that we have a uni-

dimensional measure. In the present study the eigenvalues of the principal component analysis of the residuals shows a value of $\bar{\chi} = 0.673$, that is not greater than the chance value for $N = 300$, $L = 60$, $\bar{\chi} = 2$, thus supporting the single dimensionality concept (see Linacre, 1998, pp 266-283).

(3) Testing for good global Item-Person Fit Statistics

The item-person test-of-fit examines the response patterns for items across persons and the person-item test-of-fit examines the response patterns for persons across items using residuals. Residuals are the differences between the actual responses and the expected responses as estimated from the parameters of the measurement model. When these residuals are summed and standardized, they will approximate a distribution with a mean near zero and standard deviation near one, when the data fit a Rasch measurement model.

(4) Person Separation Index

Using the estimates of the person measures and their standard errors, the RUMM program calculates a Person Separation Index that is constructed from a ratio of the estimated true variance among person measures and the estimated observed variance among person measures. This tests whether the standard errors are much smaller than the differences between the person measures. It is interpreted just like a Cronbach Alpha but is based on the Rasch estimates rather than the raw scores (Cronbach, 1951).

(5) Testing for good individual item and person residuals

Residuals are the differences between the observed values and the expected values estimated from the parameters of the Rasch measurement model. It is instructive

to examine these outputs as they give an indication of whether persons are answering items in a consistent way and they give an indication of individual person and individual item fit to the measurement model.

(6) Item Characteristic Curves

Item Characteristic Curves examine how well the items differentiate between persons with measures above and below the item location. It also shows a comparison between the observed and expected proportions correct for a number of class intervals of persons.

(7) Person Measure/Item Difficulty Map

The RUMM program produces two types of person measure/item difficulty maps. These maps show how the person measures are distributed along the variable and how the item difficulties are distributed along the same variable (measured in logits). They show which items are easy, which ones are of medium difficulty and which ones are hard. They show how well the item difficulties are targeted at the person measures. That is, they show whether the items are too easy or too hard for the persons being measured and whether new items need to be added, or whether there are too many items of similar difficulty (some of which are thus not needed).

(8) Testing for construct validity

Suppose that your items are conceptually ordered by increasing difficulty (downwards) and the perspectives are ordered by increasing difficulty (to the right) and this represents the structure behind your variable. In Rasch measurement, all the item difficulties are calculated on the same linear scale and so the item difficulties can be compared with their conceptualised order. In this case, the item difficulties increase

vertically downwards for each perspective by item and they increase horizontally to the right for each item by perspective. Agreement between the conceptualised order and Rasch measured order provides strong support for the structure of the variable as it was postulated before the data were collected and analysed.

Guttman Scales

Guttman scaling, sometimes also known as cumulative scaling, is a helpful measurement model that compliments a Rasch measurement in research where the sample or number of respondents is low, as was the case in this present study. Andrich (1985) points out that Guttman scales can work well with Rasch modelling analysis (Andrich, 1985). Sometimes used in educational and psychological research, this measurement instrument is based on a scaling technique that was developed by Louis Guttman (Fabrigar & MacGregor, 2006; Guttman, 1944,1950). The main objective of Guttman scaling is to create a uni-dimensional continuum for a concept requiring measurement with the intended outcome of producing perfect item response patterns using only the total scores (Guttman, 1944, 1950). Tested through a scalogram analysis, the Guttman scale presents a uni-dimensional scale of items which is conceptually created and ordered from easy to hard (Guttman, 1950).

In a Guttman scale, the respondents who agree with a hard (or hardest) test item will also agree with all of the easy (or easier) items that preceded it. For example in this study, which included a five-item cumulative scale, if a respondent indicates that item five is the hardest item, it means that the respondent will also indicate that items 1,2,3 and 4 are easier. If a respondent doesn't find item five as being the hardest item, and has listed item four as the hardest item, then the respondent should find items one, two and three to be to easier than item four, and so on. The main point in Guttman scaling is

to maximise the reproducibility of response patterns from a single score. Once the respondent's total score (the measure) is known, then the response pattern will also be evident. Table 4.1 shows a perfect Guttman response pattern with four responses scored 1,2,3 or 4 (score 1 – No improvement due to formal school registration; score 2 – Some improvement, but not due to formal school registration; score 3 – Some improvement due to formal school registration ; and score 4 – Some significant improvement due to formal school registration). These scores are applied to the five school improvement items regarding a criterion used during the school registration process that are ordered in a Guttman pattern.

Table 4.1 Perfect Guttman Pattern Showing Four Perspectives (1, 2, 3, 4), for Five Items

Easiest Item 1	Item 2	Item 3	Item 4	Hardest Item 5	Guttman Score
4	4	4	4	4	20
4	4	4	4	3	19
4	4	4	3	3	18
4	4	3	3	3	17
4	3	3	3	3	16
3	3	3	3	3	15
3	3	3	3	2	14
3	3	3	2	2	13
3	3	2	2	2	12
3	2	2	2	2	11
2	2	2	2	2	10
2	2	2	2	1	9
2	2	2	1	1	8
2	2	1	1	1	7
2	1	1	1	1	6
1	1	1	1	1	5

Source: Designed by Harm Witten, based on Guttman scales (Guttman, 1944, 1950).
Note: Items are ordered from easiest (item 1) to hardest (item 5) and the Guttman scores are ordered from 20 (highest) to 5 (lowest) where they reflect a perfect symmetrically arranged item response pattern that is different for each score.

In the present study, twelve uni-dimensional, but non-linear Guttman Scales were created to measure beliefs about each of the twelve criteria of formal school registration, with items that were arranged in order of difficulty from easy to hard, and the total raw scores on these items were arranged from high to low respectively. Since Guttman Scaling provides a uni-dimensional, direct link of scores with item difficulties and item response patterns, it was expected that attitudes or beliefs of school administrators could be measured objectively in the present study. This would make it possible to objectively identify those school improvements which school administrators thought were easy to connect to formal school registration and those school improvements which were difficult to say that they occurred due to formal school registration.

To construct a perfect Guttman scale would require that the person responses to all of the ordered items would follow an exact easy to hard order, as set out in Table 4.1 above. Due to the difficulty of listing items with an exact correspondence between the total scores and the scoring response patterns, this is not always possible in practice. Guttman (1950) indicated that an approximate 10% error rate was permitted before any inferences derived from the scale might be considered to be invalid. While there was good agreement with the Guttman pattern for the twelve scales created in the present study, this agreement was not perfect, yet still well within the 10% error range. The Guttman scale analyses are presented in later chapters.

The next chapter explains the study design, and outlines the administrative procedures and methods used in this study.

CHAPTER FIVE

RESEARCH DESIGN AND METHODOLOGY

This chapter begins with a description of the research design and the methods used in the present study. It highlights several advantages gained through the adoption of a mixed methods research approach wherein the strengths of quantitative and qualitative research are considered to be complimentary. Next, the chapter describes the administrative and ethical approvals obtained for the study from Edith Cowan University. It outlines the construction of the research instruments used in the study and how these were tested. Following this, details about the sampling are provided and an explanation is given about the methods of data collection. The chapter is concluded with a description of the procedures used to organise and analyse the data and thereby take in the research questions of the present study.

Research Design

Mixed methods research has become a common choice of research design within educational psychology. Whereas the traditional research design within the field of education employed an analytical, 'cause and effect' approach (Burns, 1994), increasingly the modern social and behavioural sciences are putting away their differences (Johnson & Onwuegbuzie, 2004; Rocco, Bliss, Gallagher & Perez-Prado, 2003; Tashakkori & Teddlie, 2004). Researchers have begun to acknowledge that there are strengths and weaknesses in various research approaches, and it is widely accepted that both quantitative and qualitative research are useful within the field of education (Bergman, 2008; Clark & Creswell, 2008; Creswell & Clark, 2006; Creswell, 1994; Johnson & Onwuegbuzie, 2004; Punch, 2009). As indicated by Punch (2009), both research methods can be used to 'bring the strong features of each approach together in

a single study' (Punch, 2009, p.247). Through the use of more than one approach, the researcher gains access to a broader and richer data. It opens the way for a more thorough process of data analysis and establishes the research paradigm. Rather than compete as research methods, the combination of such paradigms heightens the realisation of each concept and strengthens the validity of their outcomes (Tashakkori & Teddlie, 1998). However, the literature reveals that mixed methods research is still in its early phase of development (Greene & Caracelli, 1997; Denzin & Lincoln, 1994). Shulman states that the mixed approach will only continue to succeed if and when research is clearly directed by its purpose and perspective (Shulman, 1986). He warns that a 'garbage can' approach is likely to result in research which is carelessly eclectic and exercises little or no discipline to regulate the decisions (Shulman, 1986, p.33). Nevertheless, it is the position of this study that when the use of quantitative and qualitative approaches are combined, it results in 'a better understanding' of research problems than either approach alone (Creswell & Clark, 2007, p. 5).

Mixed Method Research

The research in this study used both quantitative and qualitative methods in a mixed method correlational analysis of the beliefs of school administrators regarding the relationship between school improvements and formal school registration in non-government schools. Aimed at the key research questions regarding the relationship between formal school registration leading to school improvement, this mixed method research minimised any weaknesses that may have resulted from using either method on its own. What follows are several benefits derived through this mixed method research approach.

First, the benefits of reliable and accurate measurement techniques that incorporate complex statistical analysis are made possible through quantitative research. In this study, those benefits were realised through the development of questionnaires based on conceptualised scales and data that are analysed using a Rasch measurement model (Andrich, 1988; Masters, 1997; Rasch, 1960/1980) and Guttman Scaling (Fabrigar & MacGregor, 2006; Guttman, 1944, 1950). As indicated in the previous chapter, linear, objective measures are considered to be an improvement to the ordinal scales that are characteristic of research based on True Score Theory (Waugh & Chapman, 2005). Waugh (2007) states that the Rasch measurement model is “currently the only known method by which one can create linear, objective measures applicable to the human sciences” (Waugh, 2007, p.1).

Second, the benefits of qualitative research are realised in extra data that are obtained by means of open-ended questions and a face-to-face semi-structured interview, both of which complement the quantitative data collected. The open-ended questions provided participants with the opportunity to raise matters which may otherwise have gone unnoticed. It also offers the participants a form of anonymity whereby details are shared, that might not otherwise surface during a face to face interview (Jaeger, 1988). Further, the face-to-face semi-structured interviews provide the researcher with an “insider’s view” into the topic (Gay, 1987; Minichiello, Aroni, Timewell, & Alexander, 1991). Both the open-ended questions and face-to-face semi-structured interviews produce extra data that are not available as part of a quantitative investigation.

Greene, Caracelli and Graham (1989) and Creswell (1994) summarise and describe five beneficial incentives for combining quantitative and qualitative methods in a study.

1. Triangulation – the corroboration of findings across different approaches that strengthens the reliability and validity of the study.
2. Complementarity – the overlapping and different facets of a phenomenon may emerge.
3. Developmentally – the first method is used sequentially to help inform the second method.
4. Initiation – the discovery of paradoxes, contradictions and fresh perspectives.
5. Expansion – the use of mixed methods to add scope and breadth to a study.

(Creswell, 1994, p.. 175)

The above listed benefits were incorporated with the purpose of using mixed methods in the present study. As indicated by Miles and Huberman (1994, p. 41), the qualitative data assists the analysis of quantitative data by “validating, interpreting, clarifying and illustrating quantitative findings, as well as through strengthening and revising theory”.

Administrative and Ethical Approvals

Prior to the commencement of the study, administrative and ethical approvals were obtained from the Ethics Committee of the Edith Cowan University. Following an online submission and the presentation of a proposal for this study, approval to conduct the study was given by the Graduate Research Education Centre and by the Edith Cowan University Ethics Committee on the 25th of October 2010. This approval was sought in order to comply with the ethical considerations for the participants of the study. These ethical considerations included the following requirements.

Participants need to provide informed consent. This requirement has been achieved by means of a written introductory-invitation letter and a consent form that informed the Chairperson and the respective non-government school principals about the study and invited them to participate in the study. The introductory-invitation letter and consent form outlined the purpose of the study and provided the participants with the contact details of the researcher, the Principal Supervisor and Co-Supervisor and the Edith Cowan University Research Ethics Officer (see Appendices A-B). The participants were invited to ask questions or seek clarification on any matter regarding the study. In addition, to ensure that each Chairperson and Principal could gain a good understanding of this study, the researcher delivered a presentation about this study on the 4th of November 2010 during the Annual General Membership Meeting of the Association of Independent Schools of Western Australia. Further, an information booth outlining the present study was made available for Chairpersons and Principals to visit on the 19th of March 2011, during the Briefing the Board Conference 2011, of the Association of Independent Schools of Western Australia. Every effort was made to ensure that each Chairman and Principal could make an informed decision about their participation in this study.

The confidentiality of participants has to be maintained. In the present study, this has been secured by the absence of any direct or indirect naming of a Chairperson, school Principal or school. This researcher assures that no participant is able to be identified in this study, nor will be in any future reports resulting from this study. In those situations where a reference to a participant was considered possible, careful pseudonyms were selected and used to ensure complete anonymity.

The confidentiality of the data have to be maintained. During the course of the present study, access to the data have been restricted to the researcher and Principal Supervisor. No one else has viewed or considered the data. Public access to the data was made impossible through its storage in a locked facility. At the conclusion of the study, the data will continue to be securely stored for the required five years after which time it will be destroyed.

A summary of results needs to be made available to interested participants at the conclusion of the study. During the course of this study, several Chairpersons and Principals expressed an interest in obtaining a copy of the results of this study. As stated in the introductory letter, these Chairpersons and Principals and any other interested participants will receive a copy of those results at the conclusion of this study.

Participants have the freedom to withdraw from the study at any time. This was made known in writing to all participants via an introductory letter of invitation that was sent to each Chairperson and Principal. In addition, this right was also mentioned within the consent form that was signed by the participants (see Appendices A , B). There were no requests for a withdrawal in the study and in the event of such a request, the researcher would have kindly thanked the participant and expressed a respectful acknowledgment of the decision to withdraw.

Data Collection, Population and Samples

Study Questionnaire and Pilot Testing

To collect the measurement data, a questionnaire was formulated, in conjunction with the desire to use the Rasch Measurement Model as the preferred measuring instrument to create a linear unidimensional scale and an objective measure of the

beliefs held by school leaders regarding the twelve criteria of formal school registration. Sixty items that are recognised within the twelve criteria as standards (or school improvements) for the education of students enrolled in non-government schools were designed. For each of the twelve criteria it was possible to highlight five specific standards. The standards (items) that were included within the study questionnaire were all taken directly from the School Registration Instructions Booklet 2010, as issued by the Department of Educational Services (Department of Education Services, 2010). Although there are no publications issued by the Department of Educational Services that justify or describe the origin of the standards, discussions held with the Department of Education Services during the course of this study revealed that the standards of the twelve criteria were formerly the standards that were used by the District Superintendents from the Department of Education during their inspections of a non-government school (see Appendix G: *Journey Entry – Mr. Edward Simons*) Officials with the Department of Education Services pointed out that the standards used during formal school registration were considered to be the minimum regulatory requirements for all non-government schools. Using the prioritized order of those standards as compiled by the Department of Education Services, the items in the questionnaire were conceptually ordered from easy to hard by the researcher for this study. Table 5.1 below shows the ordered questionnaire items.

Table 5.1 Twelve Criteria and Sixty Items used in the Study Questionnaire

School Governance (Criterion One)

1. The efficiency of School Council meetings.
2. The School Council's appointment and review of management staff.
3. The School Council's community and public relations.
4. The expertise and skills of School Council members.
5. The School Councils understanding of the distinction between governance and management.

School Financial Viability (Criterion Two)

6. The standard and quality of the school's financial management.
7. The expertise and qualifications of the school's financial management staff.
8. The school's long term financial planning process and results.
9. The school's financial risk assessment and analysis.
10. The school's final (or end of year) income and expenditure position.

Enrolment & Attendance (Criterion Three)

11. The daily attendance rate of students at school.
12. The school's response to truancy situations.
13. The support of parents for the school's attendance policy and procedures.
14. The school's student enrolment projections.
15. The school's enrolment policy and procedures.

Number of Students (Criterion Four)

16. The number of students in each year group.
17. The total number of students at school.
18. The student-teacher ratio at school.
19. The school's student recruitment policy and procedures.
20. The school's student retention rate and tracking system.

Instructional Time (Criterion Five)

21. The school's compliance to the legal requirements.
22. The daily instructional times at school.
23. The number of school days within the school's yearly calendar.
24. The school's extra-curricular events supporting instructional times.
25. A reduction in the number of disruptions at school.

School Staff (Criterion Six)

26. The skills and expertise of teaching and non-teaching staff.
27. The management and performance review of staff at school.
28. The professional development program for staff at school.
29. The morale and professionalism of staff at school.
30. The support of parents and school community for staff at school.

School Infrastructure (Criterion Seven)

31. The cleanliness and appearance of the school.
32. The school's maintenance schedule and plan.
33. The Occupational Health and Safety standards at school.
34. The number of classrooms and learning spaces at school.
35. The school's welcome and receptiveness to parents and visitors.

School Curriculum (Criterion Eight)

36. The school's curriculum program.
 37. The school's strategic whole-school curriculum planning and implementation.
 38. The school's cross-curricular planning and implementation
-

Table 5. 1 (Cont.) Twelve Criteria and Sixty Items used in the Study Questionnaire

39.	The school's use of student achievement data for classroom curriculum planning.
40.	The school's communication to parents about curriculum.
<i>Student Learning Outcomes (Criterion Nine)</i>	
41.	The school's policy and procedures for student assessment.
42.	The school's use of external tests, e.g. NAPLAN.
43.	The school's expectations and standards for student learning.
44.	The school's learning program for talented and gifted students.
45.	The school's learning program for students at risk.
<i>Care for Students (Criterion Ten)</i>	
46.	The management and storage system of student records at school.
47.	The procedures to ensure internet safety.
48.	The student behaviour management at school.
49.	The school's emergency-crisis response policy and procedures.
50.	The school's pastoral care program.
<i>Disputes and Complaints (Criterion Eleven)</i>	
51.	The reduction of complaints registered at school.
52.	The school's disputes and complaints procedures.
53.	The school's commitment to the principles of procedural fairness.
54.	Parent satisfaction of the school's dispute and complaints procedures.
55.	The school's public relations on matters dealing with disputes and complaints.
<i>Legal Compliance (Criterion Twelve)</i>	
56.	The school's compliance to legal requirements.
57.	Staff training on matters dealing with legal requirements.
58.	The school's development of policy to comply with legal requirements.
59.	The school's risk assessment of policies and procedures.
60.	The school's commitment to legal compliance.

Source: Department of Educational Services, 2010

The study questionnaire (see Appendix H for Pilot Test Questionnaire Questions and Study Questionnaire) was pilot tested during a four month period, between the 4th of November 2010 and the 28th of February 2011. The pilot test participants were selected through two means. First, following a presentation about the study, delivered by the researcher during the Annual General Membership Meeting of the Association of Independent School in Western Australia (4th Nov. 2010), an introductory-invitation letter and pilot questionnaire, supplied with a self-addressed and stamped envelope, was distributed to those Chairpersons and Principals who were in attendance and willing to participate. Via this means, those participants could offer their suggestions

anonymously or directly contact the researcher concerning any question or suggestion for the questionnaire. Second, in order to ensure that a broad representative opinion might be obtained from Chairpersons and Principals, the researcher directly contacted four colleagues to discuss with them the details of the study and the pilot questionnaire. Known to the researcher through their membership with the Association of Independent School in Western Australia (AISWA), the four participants were purposefully selected as representative of the differing school types and school locations within AISWA. As a result of the pilot test, the wording of items 4, 7 and 24 was revised to better indicate the standard required. In addition, comments made by the participants prompted the consideration and inclusion of a fourth response category namely, *School Improvement, but not due to formal school registration*. Some participants had indicated that they had observed an improvement, but were unwilling to attribute that improvement to the formal school registration experience. Lastly, a number of participants mentioned that it had taken them longer than expected to complete the questionnaire. In response, the required time that was mentioned in the introductory invitation letter was increased from 15 to 20 minutes, reflecting the expressed opinions.

Interviews and Pilot Testing

Interviews were conducted with the study participants to develop a deeper understanding of the beliefs regarding the formal school registration experience and how that experience might lead to school improvements. While these interviews were initially planned to be conducted as focus group interviews and discussions, the pilot testing period for those interviews revealed that the potentially willing study participants were hesitant to join the study due to their busy schedules and serious time restrictions. Trying to convene a focus group interview meeting time, date and venue

with the study participants proved to be too difficult. In response to this situation, the study adopted a new interview format in which the researcher travelled to visit the study participants at their school site and conducted a semi-structured one-on-one interview discussion. This changed interview approach proved to be very successful. Study participants appeared relaxed and eager to share their beliefs regarding school registration and school improvement. Four colleagues assisted the researcher by providing an evaluation of the interview format and the researcher's method of questioning and discussion framework. As a result of these pilot tested interviews, the open-ended questions that were planned for the focus group discussions were adapted to better suit a face-to-face conversation. The following three key open-ended questions were selected to provide the framework for much of the subsequent interview discussions, namely; (1) How (and why) would you describe your formal school registration experience?; (2) Which criterion (and why) would you suggest played a significant role within the school registration process; and (3) What (and why, and how) improvements could be considered for the school registration process? At the conclusion of the semi-structured face to face interviews, each participant was thanked for her or his participation and invited to provide additional comments regarding the worthiness of the study aim. Participants offered encouragement and showed an interest in the results of the study.

Study Population and Samples

The population for this study was selected on the basis of their school membership in the Association of Independent Schools of Western Australian (AISWA). Reference to AISWA and non-government schools is outlined in the School Education Regulations 2000, Sec. 131 (b), where it states that the Minister of Education

is to consult with, and take into account the views of AISWA. Established in 1962 as a non-profit organisation, the AISWA supports and represents the interests of non-government schools in Western Australia. AISWA has 150 member schools (www.ais.wa.edu.au, 2010) that enrol some 72,000 students, accounting for approximately 16% of Western Australian school enrolments. Table 5.2 shows the AISWA member schools student enrolment by primary and secondary enrolments.

Table 5.2 AISWA Member School Enrolments

Enrolments

2010		
AISWA MEMBER	Primary (K-7)	36,456
SCHOOLS	Secondary	35,694
ENROLMENTS	Total	72,150

(Source: www.ais.wa.edu.au, 2010)

The population represents member schools in AISWA that provide for students from all social and ethnic backgrounds. This includes high-fee and low-fee schools and schools which espouse a religious or values-based education. Table 5.3 shows the diversity of the membership within AISWA.

Table 5.3 AISWA Member Schools

AISWA Member Schools	No.
Aboriginal Independent Community Schools	14
Adventist Christian Schools	7
Anglican	20
Baptist	8
Catholic	8
Christian Schools Australia	15
Christian Education National	13
Free Reformed Church	6
Greek Orthodox	1
Islamic	3
Jewish	1
Lutheran	3
Montessori	12
Rudolf Steiner	5
Uniting	8
Other *	26
* Not all member schools have a designated affiliation with a faith, philosophy or grouping of schools. Source: www.ais.wa.edu.au , 2010	

While most AISWA member schools (73%) are located in or near Western Australia's major capital city, Perth, there are also member schools located in the most remote regions of Western Australia, many hundreds or thousands of kilometres from Perth. Table 5.4 shows the break-down of the AISWA member schools in terms of school type and school location. The population for this study was taken as N-150 – one Principal or School Council Chairperson from each of the AISWA member schools.

Table 5.4 AISWA Scholl Type and School Location

AISWA School Type and School Location	No.
Primary	44
Secondary	12
Composite	94
Total	150
Metropolitan	110
Rural	24
Remote	16
Total	150
Boys:	
Secondary	3
Composite	7
Total	10
Girls:	
Secondary	3
Composite	7
Total	10
Co-Educational:	
Primary	44
Secondary	6
Composite	80
Total	130
Source: www.ais.wa.edu.au , 2010	

School Questionnaire Sample (N=110/150)

There were approximately 400 School Council Chairpersons, School Principals and Deputy Principals working in 150 AISWA member non-government schools, (excluding Catholic Schools). These School Administrators may have been assisted by others at their schools, however, the ultimate responsibility to ensure that a school has achieved and complied with the school registration standards, as outlined in the criteria used during the formal school registration process, remained with the School Council Chairperson, Principal and Deputy Principal. It is the role of the School Council

Chairperson, Principal and Deputy Principal to complete the school registration application and it is they who must sign the school registration application. It is likely that most of the School Administrators will have had the assistance of the Deputy Principal during the formal registration process. However, it was not possible for the researcher to be certain that every AISWA member school did have a Deputy Principal or that their responsibilities may have included the completion of the school registration application. The aim was to have at least one of the three persons responsible from each of the 150 AISWA schools answer the questionnaire. After repeated tries to encourage greater participation over ten months, 110 schools had responded and answered the questionnaire, representing 73% of non-government schools in Western Australia (see Table 5.5).

Table 5.5 School Sample for Study Questionnaire

School Sample for Study Questionnaire				
	School Sample No.	% of Sample Total (N = 110)	% of Total No. AISWA Schools	Total No. of AISWA Schools
Primary 50%	22	20%		
Secondary 67%	8	7%		44
Composite 37%	35	31%		12
Total	65	58%	43%	94 150
Metropolitan 35%	39	36%		
Rural 96%	23	21%		110
Remote 2%	3	2%		24
Total	65	58%	43%	16 150

Interview Sample (N=14)

The pilot testing period for the interviews revealed that many potentially willing participants were hesitant to join the focus group interviews due to a busy schedule, serious time restraints, and possible political and employment implications for them. In response to this situation, the researcher visited the participants at their school site and conducted a semi-structured one-on-one interview discussions. Due to the vast distances required to travel by the author in order to visit schools located in the regional and remote areas, the interview sample was restricted to N=14. Initially eighteen study participants had agreed to participate in the semi-structured interview discussions, but four later declined to be interviewed. One participant replied with the following message, “I want to support this study, but I just don’t have enough time. Our school is about to be re-registered.” Two participants who had agreed to be interviewed, later expressed some hesitation at having their conversations recorded (there were possible political and employment implications). Brief notes only were written for these.

Data Collection

Following the launch of the study on Saturday, 19th March 2011, which occurred at the annual ‘Briefing the Board Conference’ of the Association of Independent Schools of Western Australia (AISWA), a six month data collection period commenced. From the 19th of March 2011 till the 30th of November 2011, the collection of data was achieved in two ways. The first way involved the administration of a study questionnaire to the Chairpersons and School Principals of member schools of the AISWA. The second way involved holding one-on-one semi-structured interview discussions with the Chairpersons and School Principals who had completed the questionnaire and agreed to participate. The data collection of the study questionnaire

and semi-structured interview discussions occurred concurrently. Figure 5.1 shows the quantitative and qualitative data collection sequence of the present study.

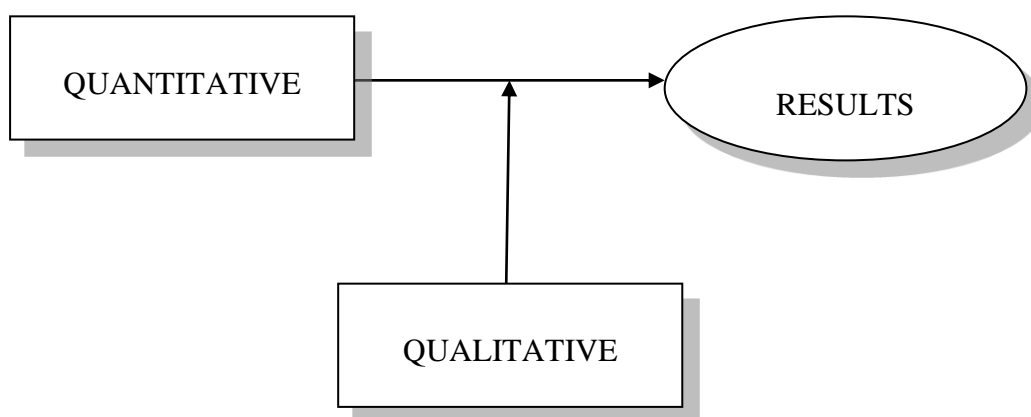


Figure 5.1 Study Procedure Model for Data Collection

Source: Creswell, J.W., Plano Clark, V.L. Guttman, M.L., & Hanson, W.E. (2003)

Collection of Questionnaire Data

An introductory-invitation letter, consent form, study questionnaire and self-addressed stamped A4 envelope were mailed to the attention of the each chairperson and school principal working in the 150 member schools of AISWA. Each AISWA member school would have thus received two study questionnaire packages during the third week of April 2011. The names and contact details of the chairpersons and school principals were obtained via the membership details of AISWA (see becoming a member, www.ais.wa.edu.au). In an effort to maximise the response rate, three additional measures were taken to encourage greater participation. First, a follow-up letter was sent to the chairperson and the school principal three weeks later, reminding them about the questionnaire and urging their participation. Second, an email introductory-invitation message, which included an attachment of the consent form and study questionnaire, was emailed to each school principal, and to the Chairperson, if

their email address was available via AISWA website. Third, an online version of the study questionnaire was made available for participants. Using a Qualtrics online survey platform to ensure the anonymity and single participant usage, each study participant was encouraged to complete the study question online. At the conclusion of the questionnaire, the study participants were invited to participate in an interview discussion. The data collection of those interview discussions is now described.

Collection of Interview Data

Following the administration of the study questionnaire, eighteen school leaders (Chairpersons and Principals) indicated that they were willing to participate in a semi-structured interview discussion. These school leaders were contacted by phone or email to arrange for an appropriate time and place to hold the interview discussion. Four school leaders subsequently declined to be interviewed due to a lack of time. On account of the significant distances between the various schools and the associated costs of travelling to several regional and remote locations, it was essential to carefully plan the time and location each interview. The researcher estimates that over 5500 kilometres were travelled to collect the study interview data from school leaders working in regional and remote locations.

Prior to the interview, the study participants were informed of the following information namely; (1) the purpose of the interview; (2) the approximate time required for the interview; (3) the assurance of confidentiality and anonymity; (4) the right to refuse to answer any question and to withdraw from the interview at any time; and (5) the right to obtain a copy of the interview transcript. Each study participant was shown how the interview would be recorded using an iphone and that upon request the recording would be discontinued at any time. The average length of the interview was

20 minutes, though several interviews did go well beyond that time estimate. The school leaders appeared relaxed and eager to share their registration experiences. No study participant sought to stop the interview or recording of it. Three key questions serve to guide the interview discussion and most study participants provided additional comments and thoughts regarding their beliefs and experiences. Each study participant was thanked for his or her participation. Participants offered their encouragement to the researcher and showed a strong interest in the results of the study.

Data Analysis

Rasch Measurement

The collected data from the study questionnaire were analysed using the computer program Rasch Unidimensional Measurement Models (RUMM 2030) (Andrich, Sheridan, & Luo, 2010). The Rasch Measurement Model is the preferred measuring instrument to create a linear unidimensional scale, objective measure of the attitudes held by school leaders regarding the twelve criteria and related school improvement standards of the formal school registration. It is the Rasch models that show how to determine what is measureable on a linear scale, how to determine what data can be reliably used to create a linear scale, and what data cannot be used in the creation of a linear scale (Waugh, 2006, Wright, 1999). Through the RUMM program a number of coloured graphs were created to highlight a linear scale of the beliefs held by school leaders. Two scales were created using the RUMM computer program, namely, 'A Rasch-Created Linear Scale of School Administrator's Beliefs that Actual School Improvements Were Due to Formal School Registration' and 'A Rasch-Created Linear Scale of School Administrator's Beliefs that Expected School Improvements Were Due to Formal School Registration'. The study questionnaire items, that are the

standards of the twelve criteria used in formal school registration, were ordered from easiest to agree that school improvement was due to formal school registration (top of scale) to hardest to agree that school improvement was due to formal school registration (bottom of the scale). The results of this data analysis are discussed in Chapters Six and Seven.

Guttman Scales

Twenty-four Guttman Scale non-linear scores (12 for what actually causes improvement and 12 for what is expected to cause improvement) were used to calculate 72 zero-order, inter-correlations between the twelve criteria of formal registration, using the IBM Statistical Package for the Social Sciences (IBM SPSS 21) computer program. In addition, the Guttman Scale non-linear scores were used to present a number of cross-tabulations of the scores against the context variables (like size of school, school location, type of school and so on). Only the most important correlations and cross-tabulations are presented in this thesis because there were just too many to report all of them. For example, there were $24 \times 6 = 144$ cross-tabulations performed. These data analyses provided supportive evidence for the measurement of school administrator's beliefs regarding the relationship between school improvement and formal school registration.

Interviews

The semi-structured interview discussions data were analysed using the Miles and Huberman framework (Miles & Huberman, 1994). Further, by applying the principles of analytic induction (Punch, 2005), the data were repeatedly examined. The audio recordings of each interview discussion were transcribed, examined and then imported for further analysis into the Nvivo10 computer program (QSR International,

2012). Nvivo10 is a software program that supports qualitative research and complements the Miles and Huberman framework for qualitative data analysis (Richards, 2004). It is designed to handle non-numeric data like interviews and open-ended survey responses. Nvivo10 employs a coding strategy which facilitates the reduction of data, the discovery of themes (nodes) and how the data inter-relates (Gilbert, 2002). The data analysis identified seven themes and highlighted the complexity of the issues surrounding the formal school registration process. The data analysis and discussion from interviews with school administrators, regarding school improvement and the formal school registration process, is presented in Chapters Eleven and Twelve.

What follows in Chapters Six and Seven is a presentation of the results of the Rasch measurement analysis of the data for this study.

CHAPTER SIX

DATA ANALYSIS (PART 1) – RASCH MEASUREMENT

SCHOOL ADMINISTRATORS' BELIEFS THAT ACTUAL SCHOOL IMPROVEMENTS WERE DUE TO FORMAL SCHOOL REGISTRATION

Data relating to this chapter were collected between 19th March 2011 and the 30th November 2011 and analyzed with the computer program Rasch Unidimensional Measurement Models (RUMM 2030) (Andrich, Sheridan & Luo, 2010). The results of these data analyses are reported in two chapters: (1) Chapter Six pertains to a Rasch-Created Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration; and (2) Chapter Seven pertains to a Rasch-Created Linear Scale of School Administrators' Beliefs of Expected School Improvements That Would Occur Due to Formal School Registration.

There were potentially available 150 non-government member schools of the Association of Independent Schools in Western Australia. One hundred and ten School Administrators, constituting approximately 72% of the independent schools, actually completed a questionnaire of administrators' beliefs. Of the 110 participants, only 65 (approximately 59%) completed all twelve parts of the questionnaire and, of those 65, only 60 completed all 120 questions. This left completed data for 60 School Administrators based on 60 questions for Actual Beliefs and 60 School Administrators for 60 questions based on questions for Expected Beliefs. While it would have been ideal if all 150 schools had responded to the study questionnaire, since it is generally considered that Rasch analyses are best done with say 10-20 items and 200+ persons (one cannot estimate item thresholds when some response cells have no data because of insufficient respondents), in the present study, the Rasch analysis was done with many

more items (60), but many less persons (60). This was possible because the thresholds were re-parameterised into principal components (not the factor analysis kind), but functions of the threshold frequencies were used as sufficient statistics for those parameters from which the thresholds were recovered readily (see Andrich & Luo, 2003). The standard errors are usually large, as they were in this case.

This chapter explains the initial Rasch analyses and the final Rasch analysis output supporting the creation of a Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration (see also Tables 6.2 to 6.5 and Figures 6.1 to 6.6). The output shows the summary supporting statistics, the standardized fit residuals, the Item Characteristic Curves, the Response (Scoring) Category Curves, the ordered thresholds and some targeting graphs based on the data from a questionnaire. There were 12 parts in the questionnaire: (1) School Governance, (2) School Financial Viability, (3) Enrolments & Attendance, (4) Number of Students, (5) Instructional Time, (6) School Staff, (7) School Infrastructure, (8) School Curriculum, (9) Student Learning Outcomes, (10) Care for Students, (11) Disputes and Complaints, (12) Legal Compliance, and the items that formed these 12 aspects were ordered from easy to hard (see Tables 6.6 and 6.7). This chapter ends with a summary of the main findings.

Initial Rasch Analysis

In the original data collection, there were four response categories: there was no improvement due to school registration (scored 1); there was some improvement, but it was not due to school registration (scored 2); there was for some improvement due to school registration (scored 3); and there was significant improvement due to school registration (scored 4). The Rasch analysis with this scoring produced disordered

thresholds, meaning that the categories were not answered in a consistent and logical way. As a result of this, scoring categories 1 and 2 were combined and re-scored as zero, scoring category 3 was re-scored as 1 and scoring category 4 was re-scored as 2. The Rasch analysis was then continued and the Response (or Scoring) Category Curves then showed that the responses were scored consistently and logically.

Further Rasch analysis revealed that 12 out of 60 items did not fit the Rasch measurement model and these items were deleted through a series of three separate analyses. These were items 2, 4, 18, 22, 26, 40, 44, 46, 76, 84, 90, 100 (see Table 6.1). Though they were initially proposed as content valid, they did not fit the strict requirements of the Rasch measurement model and were therefore deleted before further analysis was continued. The Rasch program does not tell the researcher how to re-word the items so that they fit the measurement model - it only tells the researcher whether the particular wording used for an item produces data that fit the measurement model.

There are several possible reasons why these 12 items did not fit the Rasch model. One reason is that the School Administrators did not agree amongst themselves on the difficulty (location) of some items on the Actual School Improvement scale. For example, item 4, *The School Council's appointment and review of management staff*, may have been considered differently, depending on whether the School Administrator was a Council Chair or School Principal. Another possible reason for several non-fitting items is the link as to whether the item was strongly influenced by legislative control. For example, item 46, *The number of school days within the school's yearly calendar*, is a pre-determined condition by the Minister of Education and cannot be improved by the School Administrator, although it may have been interpreted

differently by different School Administrators. Also, on re-examining the wording of these non-fitting items, it does appear that some of them, at least, required a clearer description. For example, item 100, *The school's pastoral care program*, appears restrictive and did not include the general notion of 'student support', meaning that it could have been interpreted differently by different School Administrators.

Table 6.1 Twelve non-fitting items for School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

No.	Item Wording
2.	The efficiency of School Council meetings actually improved.
4	The School Council's appointment and review of management staff actually improved
18.	The school's financial risk assessment and analysis actually improved
22.	The daily attendance rate of students at school actually improved
26.	The support of parents for the school's attendance policy and procedures actually improved
40.	The school's student retention rate and tracking system actual improved
44.	The daily instructional times at school actually improved
46.	The number of school days within the school's yearly calendar actually improved
76.	The school's cross-curricular planning and implementation actually improved
84.	The school's use of external tests, e.g. NAPLAN actually improved
90.	The school's learning program for students at risk actually improved
100.	The school's pastoral care program actually improved

Final Analysis (N=60, I=48)

Summary of Fit Statistics

Of the 60 items, 48 items fitted the Rasch model in the final analysis. Table 6.2 is a summary of the fit statistics. It shows the standardized fit residual mean of -0.175 logits with a standard deviation 0.861 logits for the items and a standardized fit residual mean of -0.241 logits with a standard deviation of 0.773 logits for the persons. These

are close to the ideal standardized fit residual of mean near zero with a standard deviation near one meaning that the residuals are acceptable and the pattern of responses is acceptable.

Table 6.2 also shows the Cronbach Alpha (0.93) and the Person Separation Index (0.86) for the 48 items. These are constructed essentially in the same way and interpreted in a similar way. However, while Cronbach's Alpha is calculated on the raw response scores, the Separation Index is calculated using Rasch parameter estimates and the standard errors. The maximum value for both the Cronbach Alpha and the Separation Index is 1, and the values of 0.93 and 0.86 are high, indicating that the school improvement measures are reliable and well-separated in comparison to the errors. Based on the Separation Index, the RUMM program rates the overall power of test-of-fit for the 48 items as excellent (see Table 6.2) which means that there is sufficient power to determine any non-agreement amongst the School Administrators to the location of the items on the scale.

The item-trait interaction chi-square is 83.763 with $df=96$ and $p=0.81$ (see Table 6.2). This indicates that there is no significant interaction between the responses to the items and the location values along the scale and that there is very good agreement about the item difficulties along the scale. The good item-trait interaction chi-square is an important support for the view that a unidimensional scale has been created because it means that a single parameter for each person (the person measure) and a single parameter for each item (the item difficulty) can be used to accurately predict each person's response to each item.

Table 6.2 Summary Statistics of the Rasch-Created Linear Scale of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

ITEM-PERSON INTERACTION					
	ITEMS			PERSONS	
	Location	Fit	Residual	Location	Fit Residual
Mean	0.000	-0.175		-4.980	-0.241
SD	2.770	0.861		1.584	0.773
Skewness		0.888			1.292
Kurtosis		0.239			1.869
Correlation		-0.574			0.297
Complete data df =		0.937			
ITEM-TRAIT INTERACTION					
ITEM-TRAIT INTERACTION			RELIABILITY INDICES		
Total Item Chi-Square		83.763	Separation Index	0.85765	
Total Deg of Freedom		96.000	Cronbach Alpha	0.93274	
Total Chi-Square Probability		0.809324			
LIKELIHOOD-RATIO TEST					
LIKELIHOOD-RATIO TEST			POWER OF TEST-OF-FIT		
Chi-Square			Power is	EXCELLENT	
Degrees of Freedom			[Based on Separation Index of 0.85765]		
Probability					

Note:

- 1.The fit residuals are the difference between the predicted responses from the Rasch Model and the actual responses. When the residuals are standardized and the data fit the Rasch Measurement Model, the fit residuals should have a mean near zero and a SD near 1 (which they have in this case)
- 2.The item-trait interaction, total chi-square shows the agreement between all the persons to the difficulties of the items along the scale and this is very good ($p=0.81$). This means that the one parameter can be used for each person (person measure) and one parameter can be used for each item (item difficulty) to accurately predict each person's response to each item.
- 3.The Separation Index is constructed as the ratio of the estimated true variance among the persons and the estimated observed variance among the persons using the estimates of their locations and the standard errors of these locations. It is interpreted in a similar way to the Cronbach Alpha (Cronbach, 1951). In this case it is very acceptable at 0.86.

Individual Item-Fit

All 48 items fitted the measurement model with $p > 0.07$ (see Table 6.3).

Table 6.3 Item Difficulties (Locations), Standard Errors (SE), Residuals and Fit to the measurement for the Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration.

Table 6.3 (see pg. 121) Item Difficulties, Standard Errors, Residuals and Fit...

Item	Location	SE	Residual	df	Chi-Square	df	Probability
6	2.018	0.448	-0.129	44.04	0.896	2	0.639
8	-2.437	0.312	0.225	44.04	0.830	2	0.660
10	-2.655	0.300	-0.464	44.04	1.441	2	0.486
12	1.863	0.409	-0.396	44.04	3.985	2	0.136
14	2.999	0.776	-0.225	44.04	1.069	2	0.586
16	1.987	0.447	-0.613	44.04	1.307	2	0.520
20	2.743	0.654	-0.549	44.04	0.366	2	0.833
24	-2.499	0.312	1.088	44.04	3.358	2	0.186
28	2.611	0.555	0.005	44.04	2.560	2	0.279
30	-3.309	0.263	0.479	44.04	0.531	2	0.767
32	2.928	1.027	-0.318	44.04	0.341	2	0.843
24	2.928	1.027	-0.318	44.04	0.341	2	0.843
36	2.609	0.637	-0.533	44.04	0.344	2	0.842
38	2.448	0.510	-1.086	44.04	0.703	2	0.703
42	-3.464	0.257	2.266	44.04	3.083	2	0.214
48	3.239	0.799	-0.767	44.04	0.933	2	0.627
50	3.334	0.828	-1.102	44.04	1.047	2	0.593
52	2.154	0.447	-1.057	44.04	2.169	2	0.338
54	-2.619	0.301	0.722	44.04	2.148	2	0.342
56	-1.817	0.354	-0.686	44.04	1.469	2	0.480
58	1.912	0.511	0.136	44.04	2.464	2	0.292
60	2.234	0.471	-0.332	44.04	2.723	2	0.256
62	-3.342	0.253	0.806	44.04	1.382	2	0.501
64	-2.296	0.315	1.235	44.04	4.553	2	0.103
66	-3.462	0.282	0.176	44.04	0.477	2	0.788
68	3.334	0.828	-1.102	44.04	1.047	2	0.592
70	2.806	0.649	-0.708	44.04	0.357	2	0.837
72	-2.759	0.298	0.037	44.04	3.599	2	0.165
74	3.458	0.260	1.309	44.04	2.714	2	0.257
78	-1.767	0.355	-0.298	44.04	0.303	2	0.859
80	-1.833	0.391	0.699	44.04	1.309	2	0.520
82	-2.216	0.327	1.431	44.04	6.119	2	0.047
86	2.323	0.478	-1.192	44.04	1.335	2	0.513
88	2.561	0.565	-0.771	44.04	0.347	2	0.841
92	-2.486	0.309	-0.371	44.04	1.349	2	0.509
94	2.489	0.574	-0.935	44.04	2.299	2	0.317
96	3.024	0.778	-0.474	44.04	0.868	2	0.648
98	-3.471	0.277	0.374	44.04	2.263	2	0.323
102	4.023	1.276	-0.854	44.04	0.713	2	0.700
104	-2.988	0.280	1.877	44.04	1.901	2	0.386
106	-1.670	0.373	-0.680	44.04	1.061	2	0.588
108	2.942	0.756	0.364	44.04	1.011	2	0.603
110	2.819	0.648	-0.860	44.04	1.500	2	0.472
112	-2.493	0.311	-0.422	44.04	0.735	2	0.692
114	-2.019	0.322	-1.637	44.04	5.242	2	0.073
116	-3.844	0.260	-0.571	44.04	3.364	2	0.186
118	-2.307	0.315	-0.859	44.04	1.490	2	0.475
120	-3.118	0.273	-1.318	44.04	2.318	2	0.314

Notes on Table 6.3

The Difficulty of each item is in logits (the log odds of giving a positive response to an item).

1. SE is standard error in logits.
2. Residual is the difference between the observed and expected response.
3. Probability is based on the chi-square fit to the measurement model and is dependent on sample size.

Table 6.3 has a column that shows the Residuals. These are the differences between the actual response and the response estimated from the Rasch measurement parameters.

Standardized residuals are generally expected to be within the range of -2 and +2.

Table 6.3 shows that, except for item number 42, all the items have acceptable standardized residuals.

Table 6.3 also has columns showing the chi-square and its associated probability. This is a statistic that is calculated from the discrepancies between the actual item mean and the expected values according to the measurement model. If the probability has a value of less than 0.01, then it implies that the discrepancy between the actual item mean and the expected value is large relative to chance and that item should be examined. There was only one item with a value equal to 0.05. (Item 82, $p = 0.05$). All other p. values were greater than 0.05.

Item Threshold Distribution

Table 6.4 shows two thresholds calculated for each item. A threshold is a point between two response categories where there is an equal probability of answering in either category. The first threshold shows the point between response categories '0' and '1', numbered according to the Rasch program, where there is equal probability of responding either '0' or '1'. The second threshold shows the point between categories '1' and '2', numbered according to the Rasch program, where there is equal probability of responding either '1' or '2'. The thresholds are ordered in line with the ordering of

the response categories showing that School Administrators have answered the response categories consistently and logically.

Table 6.4 Un-Centralised Item Thresholds for the Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration

Item	Location	Threshold	THRESHOLDS	
		Mean	1	2
6	2.018	2.018	-2.423	6.460
8	-2.437	-2.437	-3.440	-1.434
10	-2.655	-2.655	-4.070	-1.240
12	1.863	1.863	-2.794	6.519
14	2.999	2.999	-.738	6.736
16	1.987	1.987	-2.427	6.401
20	2.743	2.743	-1.212	6.698
24	-2.499	-2.499	-3.049	-1.950
28	2.611	2.611	-1.701	6.922
30	-3.309	-3.309	-4.065	-2.553
32	2.928	2.928	-.012	5.869
34	2.928	2.928	-.012	5.869
36	2.609	2.609	-1.287	6.504
38	2.448	2.448	-1.966	6.861
42	-3.464	-3.464	-4.239	-2.689
48	3.239	3.239	-.659	7.138
50	3.334	3.334	-.565	7.233
52	2.154	2.154	-2.428	6.737
54	-2.618	-2.618	-3.591	-1.646
56	-1.817	-1.817	-3.048	-.587
58	1.912	1.912	-1.961	5.785
60	2.234	2.234	-2.240	6.709
62	-3.342	-3.342	-3.614	-3.069
64	-2.296	-2.296	-4.049	-.543
66	-3.461	-3.461	-5.056	-1.867
68	3.334	3.334	-.565	7.233
70	2.806	2.806	-1.234	6.847
72	-2.759	-2.759	-4.312	-1.207
74	-3.458	-3.458	-4.313	-2.603
78	-1.767	-1.767	-3.072	-.463
80	-1.833	-1.833	-2.229	-1.437
82	-2.216	-2.216	-3.260	-1.172
86	2.323	2.323	-2.185	6.831
88	2.561	2.561	-1.644	6.767
92	-2.486	-2.486	-3.551	-1.422
94	2.489	2.489	-1.597	6.574
96	3.024	3.024	-.731	6.780
98	-3.471	-3.471	-4.937	-2.004
102	4.023	4.023	.507	7.539
104	-2.988	-2.988	-3.880	-2.097
106	-1.670	-1.670	-2.771	-.569
108	2.942	2.942	-.809	6.694
110	2.819	2.819	-1.239	6.877
112	-2.493	-2.493	-4.587	-.398
114	-2.019	-2.019	-4.232	.193
116	-3.844	-3.844	-5.056	-2.633
118	-2.307	-2.307	-4.361	-.253
120	-3.118	-3.118	-4.000	-2.236

Item Characteristic Curve

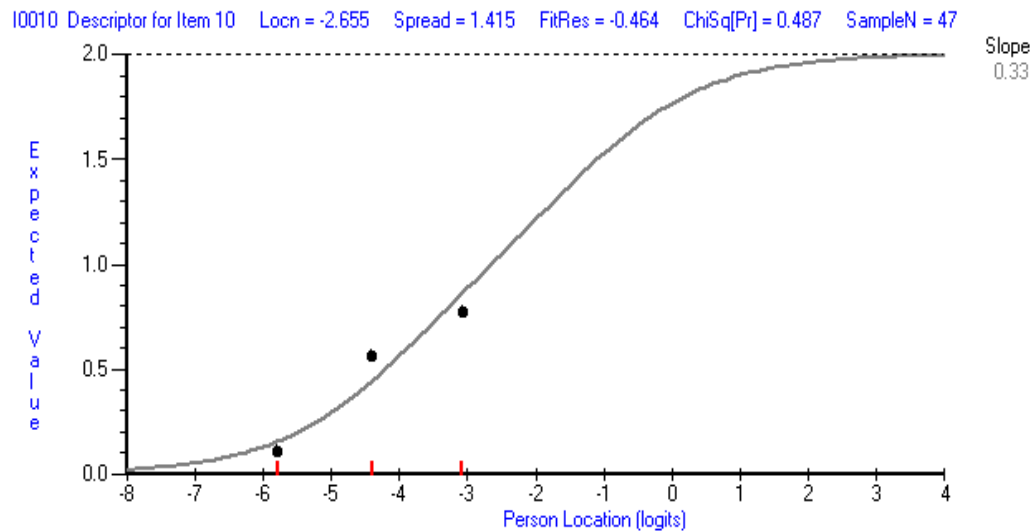


Figure 6.1 Item characteristic Curve for Item 10 of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

Note on Figure 6.1

This item discriminates well, as specified by the Rasch measurement model.

Figure 6.1 shows the Item Characteristic Curve for item number 10 - The School Council's understanding of the distinction between governance and management was improved due to formal registration. This is a very easy item with which to agree (the location or difficulty is -2.65 logits). The observed means, shown as dots, in the three class intervals are close to the ogive. This shows that the item data fits very well to the theoretical curve of the Rasch model (the chi-square probability of fit is 0.49). It means that the item discriminates between the different measures of the School Administrators and that the expected value increases with increasing measures, as specified by the measurement model. The Characteristic Curves for all 48 items were checked and found to be satisfactory.

Response Category Curves

Figure 6.2 shows the Response Categories Curve for item number 6 - The School Council's community and public relations were improved due to formal school

registration. The vertical axis represents the probability of responding in a particular response category and the horizontal axis represents the school leader's location (or measure) in logits. In Figure 6.2, the category 0 response curve indicates that a school leader with a measure of -8.0 logits (Person Location) has a probability of about one of responding in the category (*no improvement due to school registration or improvement but not due to school registration*), whereas a school leader with a measure of +2.0 logits has a near zero probability of responding in the same category for item 6. The Category 1 curve of Figure 6.2 shows that a school leader with an Actual School Improvement measure of about 2.0 logits has a probability of about 0.99 of responding in the category (*some improvement due to school registration*) for item 6, whereas a School Administrator with an Actual School Improvement measure of 7.0 logits has a probability of about 0.5 of responding in the same category. Looking at the Category Curve 2, a school leader with an Actual School Improvement measure of +2.0 logits has a probability of near zero of responding in the category (*significant improvement due to school registration*) for item 6, whereas a School Administrator with an Actual School Improvement measure of 12.0 logits has a probability of about one of responding in the same category. This shows that the School Administrators discriminated logically and consistently using the three response categories for item 6.

When the Response Categories are ordered, it is expected that the boundaries between the Categories should also be ordered. Figure 6.2 shows such a case for the Rasch item number 6 with three ordered categories. The thresholds (T_1 and T_2), which define the category boundaries are estimated in the model and are ordered. They show the points where the probability of responding either 0 or 1, and 1 or 2 respectively, are equally likely. Item 6, 'The School Council's community and public relations was improved', in the 'what actually happened' perspective, is a hard item (the location is

+2.02) and fits the Rasch model moderately well (the chi-square probability is 0.64).

The Category Response Curves for all 48 items were checked and they were found to be satisfactory, and operating as they should, when the data fit the measurement model.

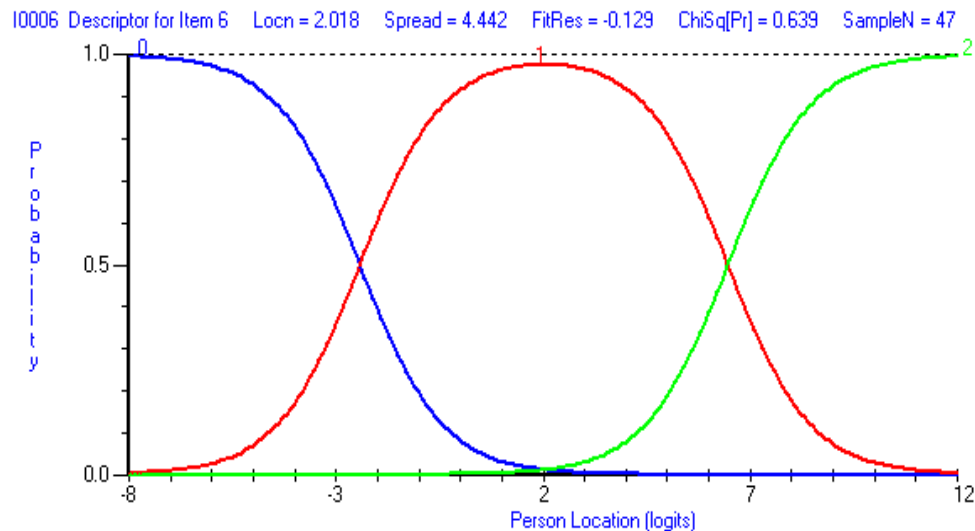


Figure 6.2 Response Category Curve for Item 6 of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

Person-Item Threshold Distribution (Targeting)

Figures 6.3 and 6.4 show the distribution of measures and item thresholds for the 60 School Administrators on the same linear scale. The distribution graphs show that there are insufficient persons with very high measures corresponding to the items with very high difficulties and, in any future use of the scale, it would be advisable to obtain more School Administrators corresponding to these very high measures. There is no statistically significant difference between male and female measures on this scale ($F=0.31$, $df=1,52$, $p=0.58$).

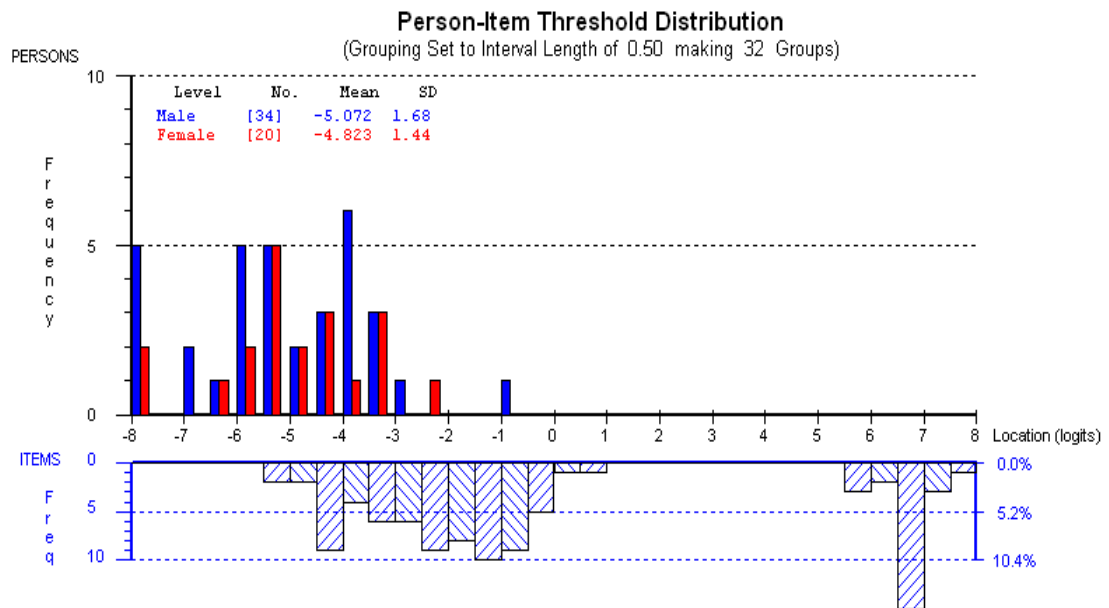


Figure 6.3 Target Graph by Gender of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration
Note: The person measures are ordered from low to high on the topside of the scale and the item difficulties are ordered from easy to hard on the bottom side of the scale.

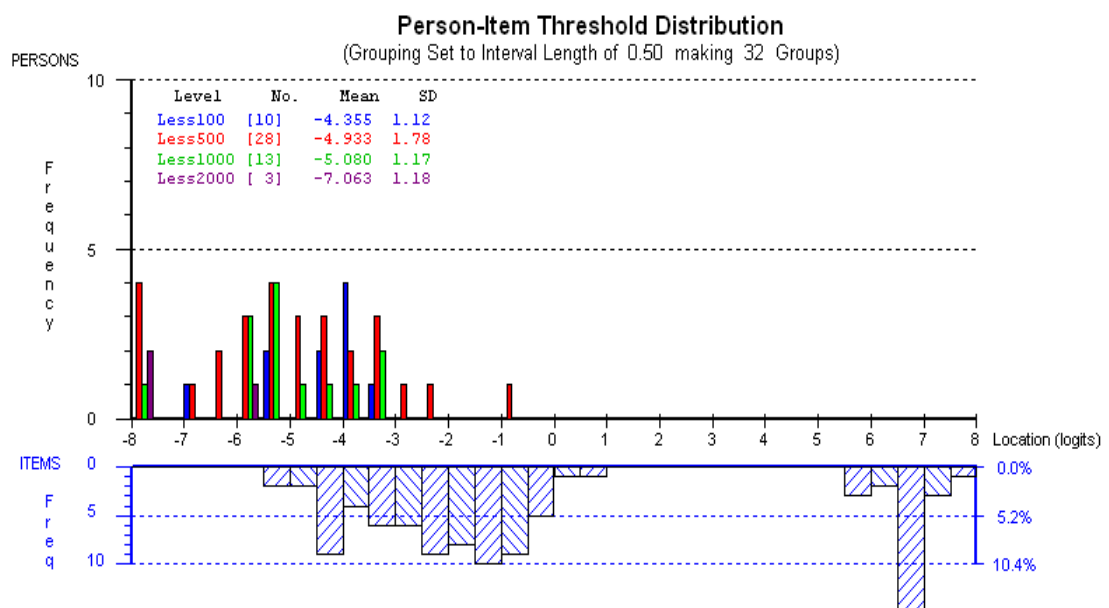


Figure 6.4 Target Graph by School Size of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration
Note:
The person measures are ordered from low to high on the topside of the scale and the item difficulties are ordered from easy to hard on the bottom side of the scale.
Figure 6.4 shows that School Administrators at larger schools have lower measures than those at smaller schools and this is statistically significant ($F=2.46$, $df=3,50$, $p=0.0007$). This is as expected since School Administrators at larger schools have greater access to resources required to meet the criteria of formal school registration.

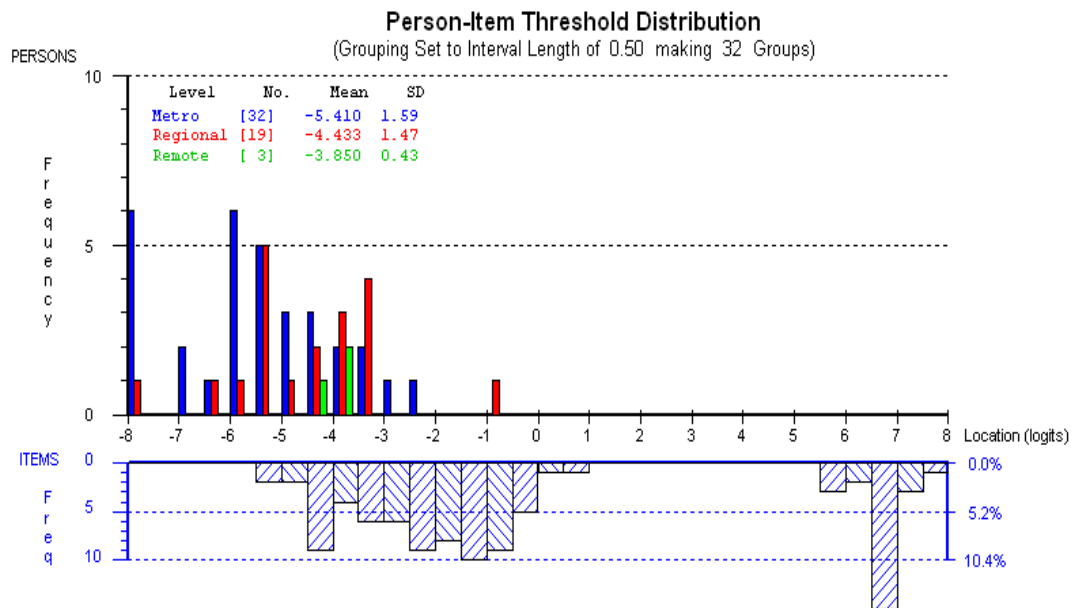


Figure 6.5 Target Graph by Location of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

Note: The person measures are ordered from low to high on the topside of the scale and the item difficulties are ordered from easy to hard on the bottom side of the scale.

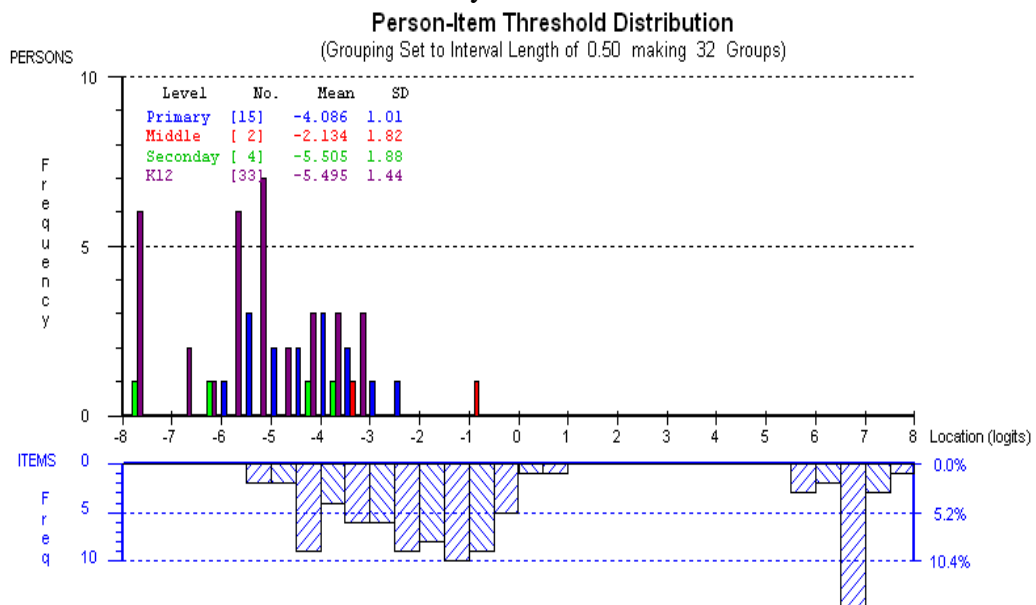


Figure 6.6 Target Graph by School Type of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

Note:

Figures 6.5 and 6.6 show that school location and school type are not statistically significant ($F=3.34$, $df=2,51$, $p=0.04$) and ($F=0.31$, $df=1,52$, $p=0.58$). This is as expected since the formal school registration process does not change due to location or school type. However, it should be noted that school location tends to mirror school size with smaller schools in remote areas and larger schools in the metropolitan area and this is reflected in the different probabilities.

Good Fitting Items

There were 48 good fitting items and these are ordered from easy to hard on a linear scale. Table 6.5 shows the very easy to moderately easy items. The easiest item is 116, *The school's development of policy to comply with legal requirements was improved due to formal registration* and the hardest item on this part of the scale (although it is still moderately easy) is 106, *The school's commitment to the principles of procedure fairness was improved due to formal registration*. Table 6.6 shows the hard to very hard items ordered on the same linear scale. The easiest of these hard items is 12, *The standard and quality of the school's financial management was improved due to formal registration*. The hardest item is 102, *A reduction in the complaints registered at school improved due to formal registration*.

Items for each of the twelve criteria for school registration fitted the measurement model in the Rasch-Created Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration. Items 116 and 120 pertaining to the twelfth criteria, Legal Compliance, were considered to be very easy (difficulty -3.84 logits and -3.12 logits respectively) (see Table 6.5). Item 106 which was moderately easy (difficulty -1.67 logits) came from the eleventh criteria, Disputes and Complaint, and item 78 which was also moderately easy (difficulty -1.77 logits) came from the eighth criteria, School Curriculum (see Table 6.5).

Table 6.5 A Rasch-Created Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration
(This is a block of the easiest items in difficulty order)

Items are ordered from easiest to agree that school improvement was due to formal school registration (top of scale) to hardest to agree that school improvement was due to formal school registration (bottom of the scale)

Items	Very Easy
116 The school's development of policy to comply with legal requirements,	-3.84
98 The schools' emergency-crisis response policy and procedures,	-3.47
42 The school's compliance to the legal requirements,	-3.46
66 The occupational health and safety standards at school,	-3.46
74 The school's strategic whole-school planning and implementation,	-3.46
62 The cleanliness and appearance of the school,	-3.34
30 The school's enrolment policy and procedures,	-3.31
120 The school's commitment to legal compliance,	-3.12
104 The school's disputes and complaints procedures,	-2.99
72 The school's curriculum programme,	-2.76
10 The School Council's understanding of the distinction between governance and management,	-2.65
54 The management and performance review of staff,	-2.62
24 The school's response to truancy situations,	-2.50
112 The school's compliance to legal requirements,	-2.49
92 The management and storage system of student records,	-2.49
8 The expertise of School Council members,	-2.44
118 The school's risk assessment of policies and procedures,	-2.31
64 The school's maintenance schedule and plan,	-2.30
82 The school's policy and procedures for school assessment,	-2.20
114 Staff training on matters dealing with legal requirements,	-2.02
80 The school's communication to parents about education,	-1.83
56 The professional development programme for school staff,	-1.82
78 The school's use of student achievement data for classroom curriculum Planning,	-1.77
106 The school's commitment to the principles of procedural fairness,	-1.67
	Moderately Easy

Items 12 and 16 pertaining to the second criteria, School Financial Viability, were considered to be hard (difficulty +1.86 logits and +1.99 logits respectively) (see

Table 6.6). Item 102 which was very hard (difficulty +4..02 logits) came from the eleventh criteria, Disputes and Complaint, and item 68 which was also very hard (difficulty +3.33 logits) came from the seventh criteria, School Infrastructure.

Table 6.6 A Rasch-Created Linear Scale of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration
(This is a block of the hardest items on the same scale as the more easy items)

Items ordered from hard to agree that school improvement was due to formal school registration (top of scale) to very hard indeed to agree that school improvement was due to formal school registration (bottom of the scale)

Items	Hard
12 The standard and quality of the school's financial management,	+1.86
58 The morale and professionalism of school staff,	+1.91
16 The school's long term financial planning process and results,	+1.99
6 The School Council's community and public relations,	+2.02
52 The skills and expertise of teaching and non-teaching staff,	+2.15
60 The support of parents and school community for staff at school,	+2.23
86 The school's expectations and standards for student learning,	+2.32
38 The school's student recruitment policy and procedures,	+2.45
94 The procedures to ensure internet safety,	+2.49
88 The school's learning programme for talented and gifted students,	+2.56
28 The school's student enrolment projections,	+2.61
36 The student-teacher ratio at school,	+2.61
20 The school's end-of-year income and expenditure position,	+2.74
70 The schools' welcome and receptiveness to parents and visitors,	+2.81
110 The school's public relations on matters dealing with disputes and complaints	+2.82
32 The number of students in each year group,	+2.93
34 The total number of students at school,	+2.93
108 Parent satisfaction with the school's disputes and complaints procedure	+2.94
	Harder

Table 6.6 (Continued) A Rasch-Created Linear Scale of School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

14 The expertise and qualifications of the school's financial management staff	+3.00
--	-------

96 The management of student behavior at school,	+3.02
48 The school's extra-curricular events supporting instructional times,	+3.24
50 A reduction in the number of disruptions at school,	+3.33
68 The number of classrooms and learning spaces at school,	+3.33
102 A reduction in the complaints registered at school	+4.02
	Very hard

Summary

Using the computer program Rasch Unidimensional Measurement Models (RUMM, 2030) (Andrich, Sheridan & Luo, 2010), a Rasch-Created Linear Scale of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration was created. The evidence for this was supported by:

1. Good item-person and person-item fit residuals. This is shown by a standardized fit residual mean of -0.18 with standard deviation 0.86 for the items and a standardized fit residual mean of -0.24 with a standard deviation of 0.77 for the persons which are close to the ideal standardized fit residuals of mean near zero and standard deviation near one;
2. High values for Cronbach's Alpha and the Person Separation Index with values of 0.93 and 0.86 respectively. The maximum value for both Cronbach's Alpha and the Separation Index is 1 and these high values of 0.93 and 0.86 showed that the actual school improvement measures are reasonably well-separated in comparison to the errors;
3. Good item-trait interaction given by the Total Chi-square Probability of 0.81 which shows no significant interaction along the scale meaning that there was very good agreement about the item difficulties all along the scale;

4. Good individual item fit statistics for the 48 items fitting the measurement model with ordered item thresholds;
5. Good Response Category Curves for the 48 good fitting items showing that the School Leaders used the response categories consistently and logically;
6. Good Item Characteristic Curves for all 48 items fitting the measurement model showing that all the items discriminated appropriately; and
7. Good distribution graphs showing acceptable targeting of the items against the person measures, but some improvement is desirable. There were insufficient persons (school administrators) to cover the hard and very hard items.

As the statistics supported the creation of a reliable scale from the data, it was possible to draw some valid conclusions from the scale data. There was no statistically significant difference between males and females, between school types (primary, middle, secondary and K-12 schools), or between school locations (metropolitan, regional or remote schools) in the measures of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration. There was, however, a statistically significant difference in the measure by school size (<100, <500, <1000, <2000) with the larger schools having the lower measures. This was assumed to be due to the greater resources available to School Administrators at the larger schools.

The most difficult items (meaning those registration items that did not contribute to any actual school improvements) were identified (see Table 6.6) and the easiest items (meaning those registration items that did contribute to actual school improvements) were also identified (see Table 6.5). It was also possible to identify the school administrators (although this is not reported here for ethical reasons) who had the lowest

measures (meaning that not much school improvement was due to formal registration) and those school administrators who had the highest measures (meaning that a lot of school improvement was due to formal registration).

The next chapter explains the analysis of data for a Rasch-Created Linear Scale of School Administrators' Beliefs of Expected School Improvements That Would Occur Due to Formal School Registration. This analysis makes use of the Rasch Unidimensional Measurement Models (RUMM 2030) computer program written by Andrich, Sheridan and Luo (2010).

CHAPTER SEVEN

DATA ANALYSIS (PART 2) – RASCH MEASUREMENT

SCHOOL ADMINISTRATORS' BELIEFS THAT EXPECTED SCHOOL IMPROVEMENTS WOULD OCCUR DUE TO FORMAL SCHOOL REGISTRATION

Chapter Seven presents the second part of the data analysis. The data analysis relates to data on this questionnaire perspective '*what I expected would happen, due to school registration*'. It forms the counterpart of the previous data analysis regarding the perspective, '*what actually happened, due to school registration*'. This chapter describes the Rasch analysis output which support the creation of a Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration (see also Tables 7.2 to 7.5 and Figures 7.1 to 7.6). The output shows the summary of supporting statistics, the standardized fit residuals, the Item Characteristic Curves, the Response (Scoring) Category Curves, the ordered thresholds and some targeting graphs based on the data from a questionnaire. There were no changes to the twelve parts of the questionnaire and the items that formed these 12 aspects were again ordered from easy to hard (see Tables 7.6 and 7.7). There were sixty questions in questionnaire and sixty school administrators answered each question. This chapter ends with a summary of the main findings.

While it is generally considered that Rasch analyses are best done with say 10-20 items and 200+ persons (one cannot estimate item thresholds when some response cells have no data because of insufficient respondents), in the present study, the Rasch analysis was done with many more items (60), but many less persons (60). This was

possible because the thresholds were re-parameterised into principal components (not the factor analysis kind), but functions of the threshold frequencies were used as sufficient statistics for those parameters from which the thresholds were recovered readily (see Andrich & Luo, 2003). The standard errors are usually large, as they were in this case.

The Initial Rasch Analysis (N=60, I=47)

As with the previous Rasch analysis (see Chapter Six), it was again necessary to re-score the categories. Once this was completed, the Rasch analysis secured the Response (or Scoring) Category Curves which showed that the responses were scored consistently and logically. The Rasch analysis revealed that 13 out of 60 items did not fit the Rasch measurement model and these items were deleted through a series of three separate analyses. These were items 1, 3, 17, 21, 23, 25, 37, 39, 49, 81, 95, 101, 113 (see Table 7.1). Though they were initially proposed as content valid, they did not fit the strict requirements of the Rasch measurement model and were therefore deleted before further analysis was continued.

There are several possible reasons why these 13 items did not fit the Rasch model. One reason is that the school administrators did not agree amongst themselves on the difficulty (location) of some items on the Expected School Improvement scale. For example, item 3, *The School Council's appointment and review of management staff*, may have been considered differently, depending on whether the School Administrator was a Council Chair or School Principal. Another possible reason for several non-fitting items is the legislative control related to that item. For example, item 23, *The school's response to truancy situations*, is a pre-determined process set by the Minister of Education and cannot be improved by the School Administrator, although it

may have been interpreted differently by different School Administrators. Also, on re-examining the wording of these non-fitting items, it does appear that some of them, at least, required a clearer description. For example, item 49, *A reduction in the number of disruptions at school*, did not include a clear understanding of what might constitute a ‘*disruption at school*’, meaning that it could have been interpreted differently by different School Administrators.

Table 7.1 Thirteen non-fitting items for School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

No.	Item Wording
1.	The efficiency of School Council meetings expected to improve.
3.	The School Council’s appointment and review of management staff expected to improve.
17.	The school’s financial risk assessment and analysis expected to improve.
21.	The daily attendance rate of students at school expected to improve.
23.	The school’s response to truancy situations expected to improve.
25.	The support of parents for the school’s attendance policy and procedures expected to improve.
37.	The school’s student recruitment policy and procedures expected to improve.
39.	The school’s student retention rate and tracking system expected to improve.
49.	A reduction in the number of disruptions at school expected to improve.
81.	The school’s policy and procedures for student assessment expected to improve.
95.	The student behavior management at school expected to improve.
101.	The reduction of complaints registered at school expected to improve.
113.	The school’s disputes and complaints procedures expected to improve.

Final Rasch Analysis

Summary of Fit Statistics

Table 7.2 Summary Statistics of the Rasch-Created Linear Scale of School Administrators Beliefs That expected School Improvements Would Occur Due to Formal School Registration

ITEM-PERSON INTERACTION					
	ITEMS			PERSONS	
	Location	Fit	Residual	Location	Fit Residual
Mean	0.000	-0.153		-4.747	-0.291
SD	2.485	0.749		1.463	0.938
Skewness		0.431			0.222
Kurtosis		-0.750			1.583
Correlation		-0.206			0.058
Complete data DF =		0.937			
ITEM-TRAIT INTERACTION			RELIABILITY INDICES		
Total Item Chi-Square	64.180		Separation Index	0.84	
Total Deg of Freedom	94.000		Cronbach Alpha	0.92	
Total Chi-Square Probability	0.992				
LIKELIHOOD-RATIO TEST			POWER OF TEST-OF-FIT		
Chi-Square			Power is EXCELLENT		
Degrees of Freedom			[Based on SepIndex of 0.84142]		
Probability					

Note:

1.The fit residuals are the difference between the predicted responses from the Rasch Model and the actual responses. When the residuals are standardized and the data fit the Rasch Measurement Model, the fit residuals should have a mean near zero and a SD near 1.

2.The item-trait interaction, total chi-square shows the agreement between all the persons to the difficulties of the items along the scale and this is very good ($p=0.84$). This means that the one parameter can be used for each person (person measure) and one parameter can be used for each item (item difficulty) to accurately predict each person's response to each item.

3.The Separation Index is constructed as the ratio of the estimated true variance among the persons and the estimated observed variance among the persons using the estimates of their locations and the standard errors of these locations. It is interpreted in a similar way to the Cronbach Alpha (Cronbach, 1951). In this case it is very acceptable at 0.92.

Of the 60 items, 47 items fitted the Rasch model in the final analysis. Table 7.2 is a summary of the fit statistics. It shows the standardized fit residual mean of -0.153 logits with a standard deviation 0.749 logits for the items and a standardized fit residual mean of -0.291 logits with a standard deviation of 0.938 logits for the persons. The Cronbach Alpha is 0.92 and the Person Separation Index is 0.84 for the 47 items. The maximum value for both the Cronbach Alpha and the Separation Index is 1, and the values of 0.92 and 0.84 are high, indicating that the expected school improvement measures are reliable and well-separated in comparison to the errors. Based on the Separation Index, the RUMM program rates the overall power of test-of-fit for the 47 items as excellent. The item-trait interaction chi-square is 64.18 with df=94 and p.=0.99. This indicates that there is no significant interaction between the responses to the items and the location values along the scale and that there is very good agreement about the item difficulties along the scale.

Table 7.3 Item Difficulties (Locations), Standard Errors (SE), Residuals and Fit to the Measurement for the Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration.

Item	Location	SE	Residual	DF	ChiSq	DF	Probability
5	1.666	0.417	0.378	44.02	0.159	2	0.923579
7	-1.983	0.323	-0.492	44.02	0.395	2	0.820854
9	-2.321	0.304	0.592	44.02	3.405	2	0.182253
11	-2.223	0.312	-0.762	44.02	0.729	2	0.694566
13	2.402	0.553	-0.579	44.02	0.326	2	0.849393
15	-1.772	0.352	-1.057	44.02	1.669	2	0.434044
19	2.643	0.636	-0.746	44.02	1.322	2	0.516278
27	2.711	0.613	0.003	44.02	0.433	2	0.805326
29	-2.652	0.283	1.135	44.02	5.201	2	0.074224
31	3.134	1.020	-0.539	44.02	0.340	2	0.843574
33	3.134	1.020	-0.539	44.02	0.340	2	0.843574
35	1.943	0.624	-0.342	44.02	0.442	2	0.801520

Table 7.3 (Continued) Item Difficulties (Locations), Standard Errors (SE), Residuals and Fit to the Measurement for the Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

Item	Location	SE	Residual	df	Chi-Square	df	Probability
41	-2.754	0.278	0.850	44.02	2.314	2	0.314467
43	1.361	0.422	1.434	44.02	1.158	2	0.560443
45	1.758	0.419	1.289	44.02	1.152	2	0.562198
47	3.134	1.020	-0.539	44.02	0.340	2	0.843574
51	2.216	0.468	-0.823	44.02	0.932	2	0.627634
53	-2.764	0.277	0.833	44.02	0.709	2	0.701497
55	-2.261	0.314	-0.508	44.02	2.520	2	0.283696
57	2.384	0.610	0.045	44.02	0.433	2	0.805245
59	2.523	0.602	0.248	44.02	3.727	2	0.155092
61	-2.750	0.279	0.956	44.02	1.027	2	0.598335
63	-2.110	0.314	1.322	44.02	6.567	2	0.037505
65	-3.119	0.268	0.193	44.02	0.383	2	0.825579
67	3.700	1.195	-0.866	44.02	0.572	2	0.751362
69	3.700	1.195	-0.866	44.02	0.572	2	0.751362
71	-2.215	0.308	-0.066	44.02	0.162	2	0.922184
73	-3.104	0.279	0.487	44.02	2.059	2	0.357174
75	-2.473	0.295	0.668	44.02	0.319	2	0.852625
77	1.761	0.379	-0.716	44.02	3.044	2	0.218307
79	1.673	0.467	0.642	44.02	0.682	2	0.711208
83	-1.688	0.377	-0.218	44.02	1.654	2	0.437360
85	2.280	0.468	-0.963	44.02	0.932	2	0.627372
87	2.267	0.502	-0.814	44.02	2.533	2	0.281825
89	-1.382	0.401	-1.592	44.02	4.073	2	0.130455
91	-1.894	0.324	-0.601	44.02	0.499	2	0.779089
93	1.793	0.501	-0.141	44.02	1.145	2	0.564181
97	-2.916	0.277	0.551	44.02	0.086	2	0.957934
99	2.534	0.996	-0.362	44.02	0.329	2	0.848387
103	-2.844	0.275	0.127	44.02	1.013	2	0.602631
105	-1.775	0.365	-0.423	44.02	0.707	2	0.702287
109	2.383	0.610	-0.534	44.02	1.214	2	0.544917
111	1.337	0.327	-0.179	44.02	0.711	2	0.700948
113	1.570	0.342	-0.907	44.02	2.262	2	0.322642
115	-3.569	0.256	-0.418	44.02	0.532	2	0.766305
117	-2.617	0.291	-0.962	44.02	0.884	2	0.642696
119	-2.821	0.272	-1.382	44.02	2.171	2	0.337742

Notes on Table 7.3

The Difficulty of each item is in logits (the log odds of giving a positive response to an item).

4. SE is standard error in logits. Residual is the difference between the observed and expected response.
5. Probability is based on the chi-square fit to the measurement model and is dependent on sample size.

Individual Item-Fit

All 47 items fitted the measurement model with $p > 0.04$ (see Table 7.3)

Table 7.3 has a column that shows the Residuals. Standardized residuals are generally expected to be within the range of -2 and +2. Table 7.3 shows that all the items have acceptable standardized residuals.

Table 7.3 also has columns showing the chi-square and its associated probability. There are no values less than 0.04 indicating acceptable discrepancy between the actual item value and the expected value. There was only one item with a value equal to 0.04. (Item 63, $p = 0.04$). All other p values were greater than 0.04.

Item Threshold Distribution

Table 7.4 shows two thresholds calculated for each item. The thresholds are ordered in line with the ordering of the response categories showing that school leaders have answered the response categories consistently and logically.

Table 7.4 Un-Centralised Item Thresholds for the Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration.

Item	Location	Threshold Mean	THRESHOLDS	
			1	2
5	1.665630	1.665630	-2.478	5.809
7	-1.983278	1.983278	-3.323	-.643
9	-2.321213	2.321212	-4.077	-.566
11	-2.223251	2.223251	-3.161	-1.285
13	2.401845	2.401845	-1.507	6.311
15	-1.772307	1.772307	-2.649	-.896
19	2.643100	2.643100	-1.109	6.395
27	2.710631	2.710631	-1.211	6.633
29	-2.652141	2.652141	-3.267	-2.037
31	3.134072	3.134072	.057	6.212
33	3.134072	3.134072	.057	6.212
35	1.943044	1.943044	-1.159	5.045
41	-2.754064	2.754064	-3.585	-1.923
43	1.361231	1.361231	-2.430	5.152
45	1.757698	1.757698	-2.467	5.982
47	3.134072	3.134072	.057	6.212
51	2.215646	2.215646	-2.043	6.474
53	-2.763504	2.763504	-3.436	-2.091

Table 7.4 (Continued) Un-Centralised Item Thresholds for the Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration.

Item	Location	Threshold Mean	THRESHOLDS	
			1	2
55	-2.261037	2.261037	-2.764	-1.759
57	2.384433	2.384433	-1.226	5.994
59	2.522789	2.522789	-1.259	6.305
61	-2.750125	2.750125	-3.655	-1.845
63	-2.109645	2.109645	-3.503	-.716
65	-3.118684	3.118684	-4.258	-1.979
67	3.700309	3.700309	.411	6.989
69	3.700309	3.700309	.411	6.989
71	-2.214600	2.214600	-4.001	-.429
73	-3.103670	3.103670	-4.637	-1.570
75	-2.472900	2.472900	-3.265	-1.681
77	1.760743	1.760744	-2.927	6.449
79	1.673406	1.673406	-2.049	5.396
83	-1.687674	1.687674	-2.197	-1.179
85	2.279598	2.279598	-2.041	6.601
87	2.266856	2.266856	-1.808	6.342
89	-1.382455	1.382455	-2.180	-.585
91	-1.894496	1.894496	-3.445	-.344
93	1.793198	1.793198	-1.816	5.403
97	-2.916147	2.916147	-4.144	-1.689
99	2.533842	2.533842	.005	5.063
103	-2.843958	2.843958	-3.743	-1.945
105	-1.775448	1.775448	-2.290	-1.261
107	1.784201	1.784201	-2.275	-1.231
109	2.383102	2.383102	-1.224	5.991
111	1.337106	1.337106	-4.353	7.027
113	1.570372	1.570372	-3.606	6.746
115	-3.569074	3.569074	-4.713	-2.425
117	-2.616639	2.616639	-4.089	-1.144
119	-2.820790	2.820790	-3.349	-2.292

Note: all the thresholds are ordered in line with the ordering of the response categories

Item Characteristic Curve

Figure 7.1 shows the Item Characteristic Curve for item number 11 - The standard and the quality of the school's financial management would be improved due to formal registration.

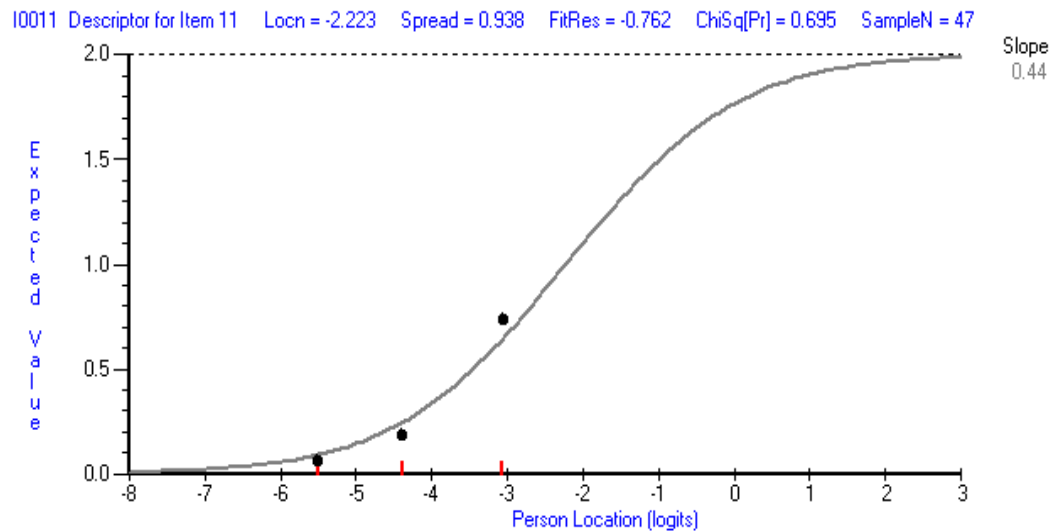


Figure 7.1 Item characteristic Curve for Item 11 of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

Item 11 is a moderately easy item with which to agree (the location or difficulty is -2.22 logits). The observed means, shown as dots, in the three class intervals are close to the ogive. This shows that the item data fits very well to the theoretical curve of the Rasch model (the chi-square probability of fit is 0.70). It means that the item discriminates between the different measures of the School Administrators and that the expected value increases with increasing measures, as specified by the measurement model. The Characteristic Curves for all 47 items were checked and found to be satisfactory.

Response Category Curves

Figure 7.2 shows the Response Categories Curve for item number 5 - The School Council's community and public relations would be improved due to formal school registration. The vertical axis represents the probability of responding in a particular response category and the horizontal axis represents the school leader's location (or measure) in logits. In Figure 7.2, the category 0 response curve indicates that a school leader with a measure of -8.0 logits (Person Location) has a probability of about

one of responding in the category (*no improvement due to school registration or improvement but not due to school registration*), whereas a school leader with a measure of +2.0 logits has a near zero probability of responding in the same category for item 5. The Category 1 curve of Figure 7.2 shows that a school leader with an Expected School Improvement measure of about 2.0 logits has a probability of about 0.99 of responding in the category (*some improvement due to school registration*) for item 5, whereas a school leader with an Actual School Improvement measure of 6.0 logits has a probability of about 0.5 of responding in the same category. Looking at the Category Curve 2, a school leader with an Expected School Improvement measure of +2.0 logits has a probability of near zero of responding in the category (*significant improvement due to school registration*) for item 5, whereas a school leader with an Expected School Improvement measure of 10.0 logits has a probability of about one of responding in the same category. This shows that the school leaders discriminated logically and consistently using the three response categories for item 5.

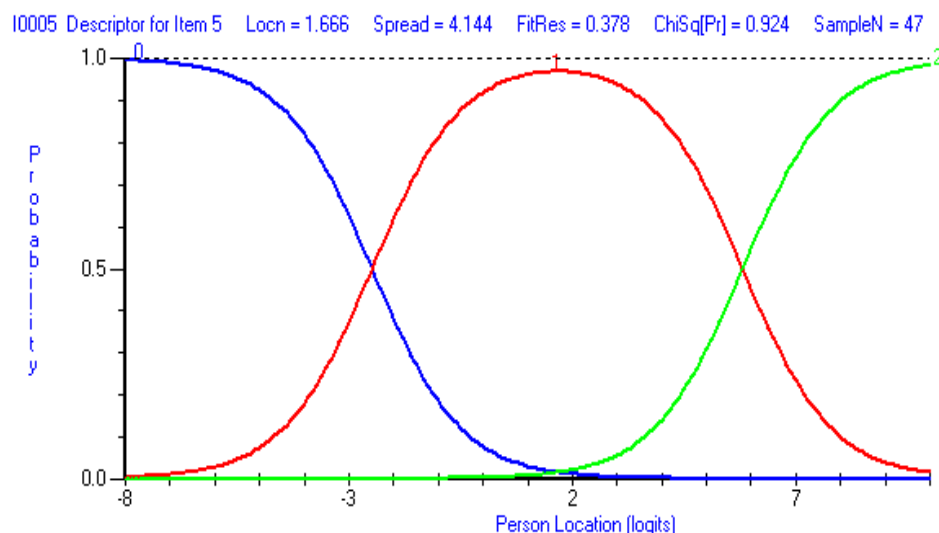


Figure 7.2 Response Category Curve for Item 5 of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

When the Response Categories are ordered, it is expected that the boundaries between the categories should also be ordered. Figure 7.2 shows such a case for the Rasch item number 5 with three ordered categories. The thresholds (T_1 and T_2), which define the category boundaries are estimated in the model and are ordered. They show the points where the probability of responding either 0 or 1, and 1 or 2 respectively, are equally likely. Item 5, 'The School Council's community and public relations would be improved', in the 'what was expected to happened' perspective, is a hard item (the location or difficulty is +1.67) and fits the Rasch model moderately well (the chi-square probability is 0.92). The Category Response Curves for all 47 items were checked and they were found to be satisfactory, and operating as they should, when the data fit the measurement model.

Person-Item Threshold Distribution (Targeting)

Figures 7.3 and 7.4 show the distribution of measures and item thresholds for the 60 school leaders on the same linear scale. The distribution graphs show that there are insufficient persons with very high measures corresponding to the items with very high difficulties and, in any future use of the scale, it would be advisable to obtain more school leaders corresponding to these very high measures. There is no statistically significant difference between male and female measures on this scale ($F=1.88$, $df=1,52$, $p=0.18$).

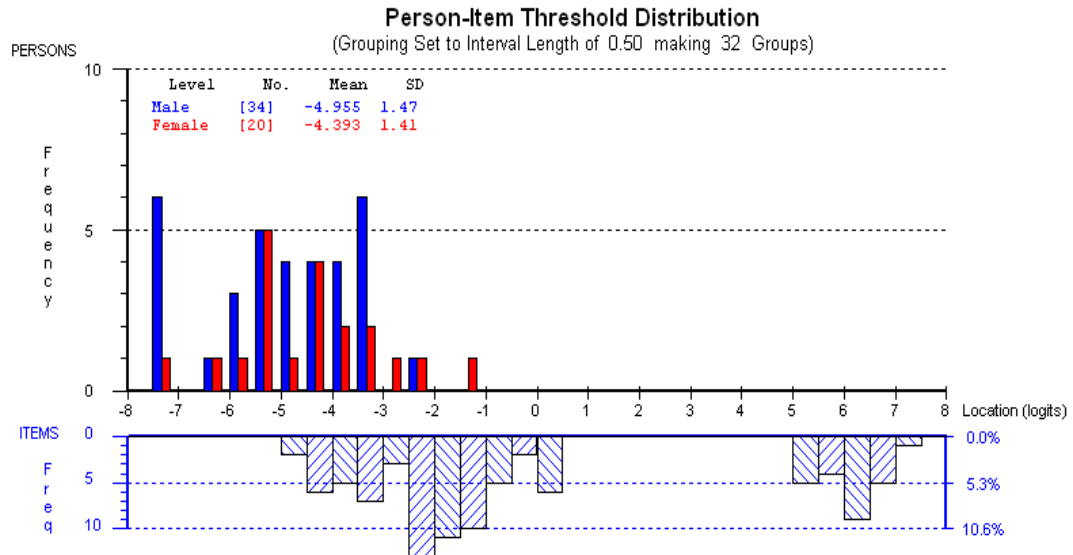


Figure 7.3 Target Graph by Gender of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration
Note: $F=1.88$, $df=1,52$, $p=0.18$ and is not statistically significant.

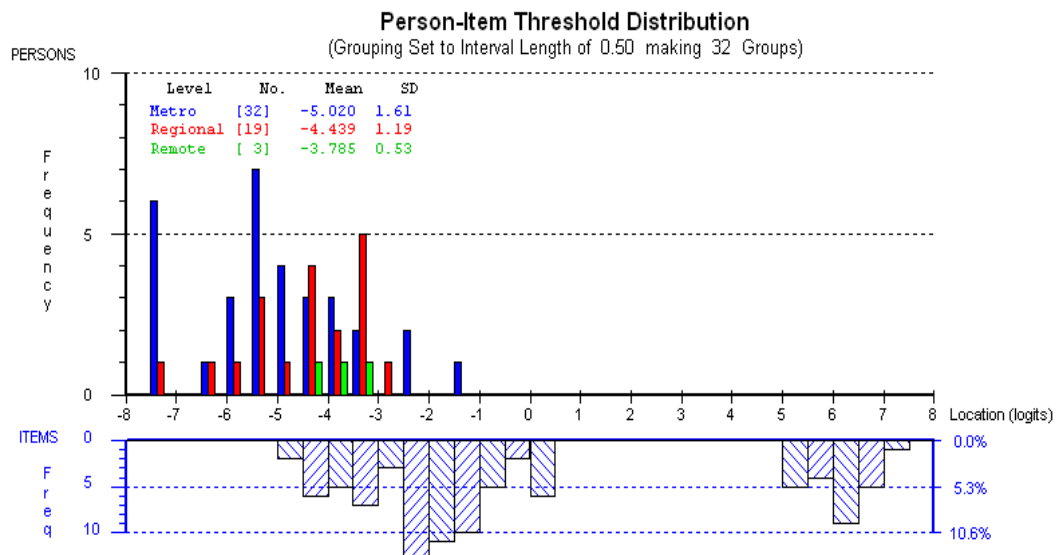


Figure 7.4 Target Graph by Location of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration
Note: $F=1.67$, $df=2,51$, $p=0.20$ and is not statistically significant

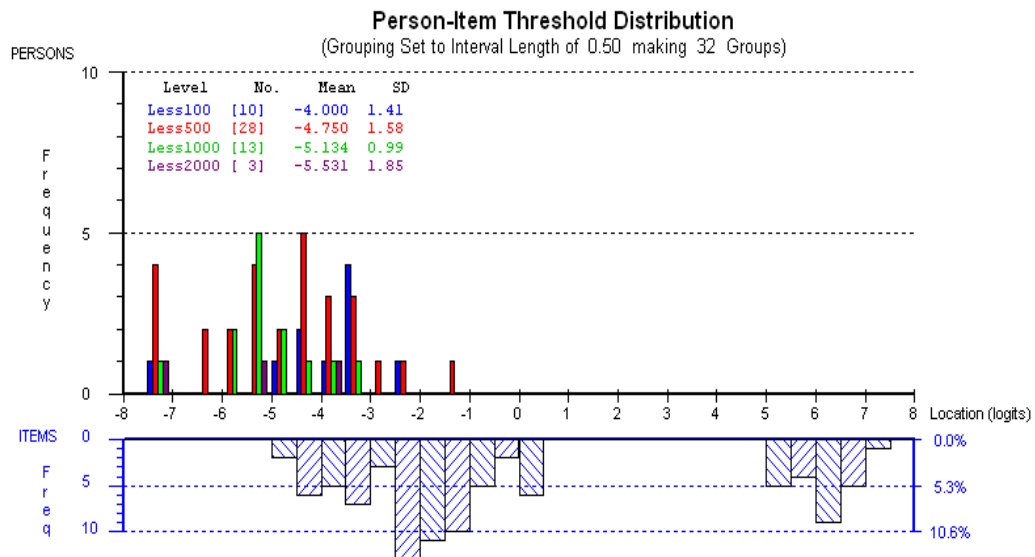


Figure 7.5 Target Graph by School Size of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration
Note: $F=1.50$, $df=3,50$, $p=0.23$ and is not statistically significant

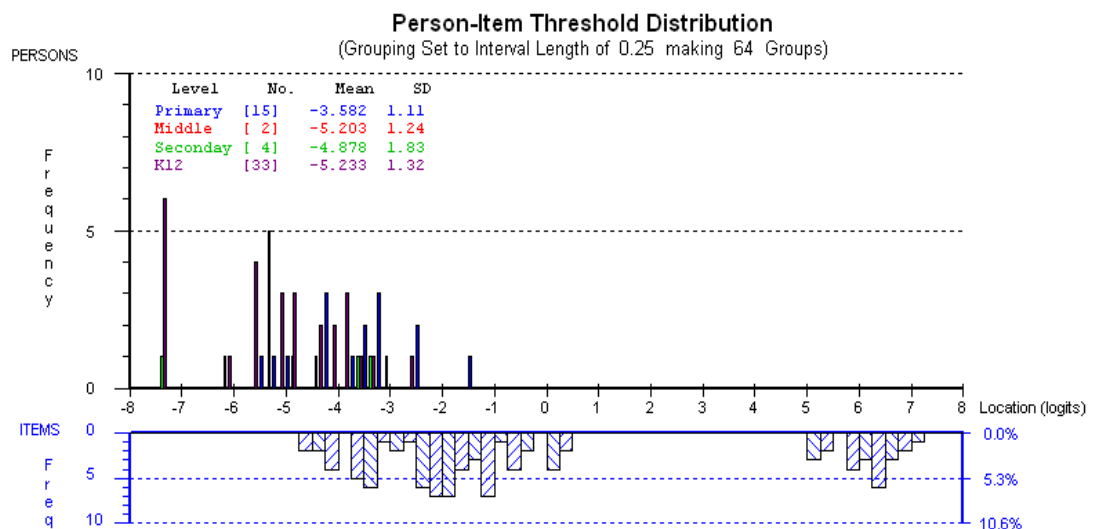


Figure 7.6 Target Graph by School Type of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration
Note: $F=5.62$, $df=3,50$, $p=0.002$ and is statistically significant with administrators at primary schools stating that they expected more improvements due to formal registration. This is as expected since school administrators in primary school tend to have fewer resources available to meet the criteria of formal school registration.

Figures 7.4 and 7.5 show that school location and school size are not statistically significant ($F=1.67$, $df=2,51$, $p=0.20$) and $F=1.50$, $df=3,50$, $p=0.23$. This is as expected since the formal school registration process does not change due to a school's location or size.

Good Fitting Items

There were 47 good fitting items and these are ordered from easy to hard on a linear scale. Table 7.5 shows the very easy to moderately easy items. The easiest item is 115, *The school's development of policy to comply with legal requirements would be improved due to formal school registration* and the hardest item on this part of the scale (although it is still moderately easy) is 89, *The school's learning program for students at risk would be improved due to formal school registration*.

Table 7.5 A Rasch-Created Linear Scale of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

(This is a block of the easiest items in difficulty order)

Items ordered from easiest to agree that school improvement would be expected due to formal school registration (top of scale) to hardest to agree that school improvement would be due to formal school registration (bottom of the scale)

	Very Easy
115 The school's development of policy to comply with legal requirements,	-3.57
65 The occupational health and safety standards at school,	-3.12
73 The school's strategic whole-school planning and implementation,	-3.10
97 The schools' emergency-crisis response policy and procedures,	-2.92
103 The school's disputes and complaints procedures,	-2.84
119 The school's commitment to legal compliance,	-2.82
53 The management and performance review of staff,	-2.76
41 The school's compliance to the legal requirements,	-2.75
61 The cleanliness and appearance of the school,	-2.75
29 The school's enrolment policy and procedures,	-2.65
117 The school's risk assessment of policies and procedures,	-2.62
75 The school's cross-curricular planning and implementation,	-2.47

Table 7.5 (Continued) A Rasch-Created Linear Scale of School Administrators Beliefs That Expected School Improvements Would Be Due to Formal School Registration

Items ordered from easiest to agree that school improvement was due to formal school registration (top of scale) to hardest to agree that school improvement was due to formal school registration (bottom of the scale)

9 The Schools Councils understanding of the distinction between governance and management	-2.32
55 The professional development programme for school staff,	-2.26
11 The standard and the quality of the school's financial management,	-2.22
71 The school's curriculum programme,	-2.21
63 The school's maintenance schedule and plan,	-2.11
7 The expertise of School Council members,	-1.98
91 The management and storage system of student records,	-1.89
105 The school's commitment to the principles of procedural fairness,	-1.77
15 The school's long-term financial planning process and results,	-1.77
83 The school's use of external tests such as NAPLAN,	-1.69
89 The school's learning programme for students at risk,	-1.38
	Moderately Easy

Table 7.6 shows the hard to very hard items ordered on the same linear scale.

The easiest of these hard items is 111, *The school's compliance with legal requirements would be improved due to formal school registration*. The hardest item is 69, *The school's welcome and receptiveness to parents and visitors would be improved due to formal school registration*.

Items for each of the twelve criteria for school registration fitted the measurement model in the Rasch-Created Linear Scale of School Administrators'

Beliefs That Expected School Improvements Would Occur Due to Formal School Registration. Item 115 pertaining to the twelfth criterion, Legal Compliance, was considered to be very easy (difficulty -3.57 logits) (see Table 7.5). Item 69 which was very hard (difficulty +3.70 logits) came from the seventh criterion, School Infrastructure (see Table 7.6).

In Table 7.6 items 67 and 69, both pertaining to the seventh criterion, School Infrastructure, were considered to be very hard (same difficulty +3.70 logits) (see Table 7.6). Absent from those listed as very hard were items pertaining to the twelfth criterion, Legal Compliance.

Table 7.6 A Rasch-Created Linear Scale of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

(This is a block of the hardest items on the same scale as the more easy items)

Items ordered from hard to agree that school improvement would be expected due to formal school registration (top of scale) to very hard indeed to agree that school improvement would be expected due to formal school registration (bottom of the scale)

Moderately Hard

111 The school's compliance with legal requirements,	+1.34
43 The daily instructional times at school,	+1.36
113 Staff training on matters on matters dealing with legal requirements,	+1.57
5 The School Council's community and public relations,	+1.67
79 The school's communication to parents about education,	+1.67
45 The number of school days within the school's yearly calendar,	+1.76
77 The school's use of student achievement data for classroom curriculum planning,	+1.76
93 The procedures to ensure internet safety,	+1.79

Table 7.6 (Continued) A Rasch-Created Linear Scale of School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

Hard

35 The student-teacher ratio at school,	+1.94
51 The skills and expertise of teaching and non-teaching staff,	+2.22
87 The school's learning programme for talented and gifted students,	+2.27
85 The school's expectations and standards for student learning,	+2.28
109 The school's public relations on matters dealing with disputes and complaints	+2.38
57 The moral and professionalism of school staff,	+2.38
13 The expertise and qualifications of the school's financial management staff,	+2.40
59 The support of parents and school community for staff at school,	+2.52
99 The school's pastoral care programme,	+2.53
19 The school's end-of-year income and expenditure position,	+2.64
27 The school's student enrolment projections,	+2.71
31 The number of students in each year group,	+3.13
33 The total number of students at school,	+3.13
47 The school's extra-curricular events supporting instructional times,	+3.13
67 The number of classrooms and learning spaces at school,	+3.70
69 The schools' welcome and receptiveness to parents and visitors,	+3.70

Very hard

Summary

Using the computer program Rasch Unidimensional Measurement Models

(RUMM, 2030) (Andrich, Sheridan & Luo, 2010), a Rasch-Created Linear Scale of

School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration was created. The evidence for this was supported by:

1. Good item-person and person-item fit residuals. This is shown by a standardized fit residual mean of -0.153 with standard deviation 0.75 for the items and a standardized fit residual mean of -0.29 with a standard deviation of 0.94 for the persons which are close to the ideal standardized fit residuals of mean near zero and standard deviation near one;
2. High values for Cronbach's Alpha and the Person Separation Index with values of 0.92 and 0.84 respectively. The maximum value for both Cronbach's Alpha and the Separation Index is 1 and these high values of 0.92 and 0.84 showed that the actual school improvement measures are reasonably well-separated in comparison to the errors;
3. Good item-trait interaction given by the Total Chi-square Probability of 0.84 which shows no significant interaction along the scale meaning that there was very good agreement about the item difficulties all along the scale;
4. Good individual item fit statistics for the 47 items fitting the measurement model with ordered item thresholds;
5. Good Response Category Curves for the 47 good fitting items showing that the School Leaders used the response categories consistently and logically;
6. Good Item Characteristic Curves for all 47 items fitting the measurement model showing that all the items discriminated appropriately; and

7. Good distribution graphs showing acceptable targeting of the items against the person measures, but some improvement is desirable. There were insufficient persons (school administrators) to cover the hard and very hard items.

As the statistics supported the creation of a reliable scale from the data, it was possible to draw some valid conclusions from the scale data. There was no statistically significant difference between males and females, by school size (<100, <500, <1000, <2000), or between school locations (metropolitan, regional or remote schools) in the measures of School Administrators' Beliefs That Expected School Improvements Would Occur Due to Formal School Registration. There was, however, a statistically significant difference in the measure between school types (primary, middle, secondary and K12 schools) with the primary schools stating that they expected more improvements due to formal school registration. This was assumed to be due to the fewer resources available to primary school administrators.

The most difficult items (meaning those registration items that were not expected to contribute to any school improvements) were identified (see Table 7.6) and the easiest items (meaning those registration items that were expected to contribute to school improvements) were also identified (see Table 7.5). It was also possible to identify the school administrators (although this is not reported here for ethical reasons) who had the lowest measures (meaning that not much school improvement was expected due to formal registration) and those school administrators who had the highest measures (meaning that a lot of school improvement was expected due to formal registration).

The next chapter explains the analysis of data for various Guttman Scales with various cross-tabulation tables.

CHAPTER EIGHT

DATA ANALYSIS (PART 3) - GUTTMAN SCALES (ACTUAL IMPROVEMENTS) AND THEIR INTER-CORRELATIONS

This chapter aims to investigate the inter-relationships between and amongst the twelve criteria of school registration and the School Administrators Beliefs that Actual School Improvements Were Due To Formal School Registration. The twelve criteria of formal school registration are: (1) School Governance; (2) School Financial Viability; (3) Enrolment & Attendance; (4) Number of Students; (5) Instructional Time; (6) School Staff; (7) School Infrastructure; (8) School Curriculum; (9) Student Learning Outcomes; (10) Care for Students; (11) Disputes and Complaints; and (12) Legal Compliance.

It was not possible to create Rasch linear measures for each of the twelve criteria because of the small number of items (five) and small sample size ($N=74$), so the next best scale, namely a Guttman Scale, was created (Fabrigar & MacGregor, 2007; Guttman, 1950; Guttman, 1944). In a Guttman Scale the items are aligned from easy to hard horizontally and the person scores are arranged vertically from high (top) to low (bottom) by items. If the data were to fit a Guttman pattern accurately, then the pattern of person responses for each item would be in a perfect step-type arrangement. If a person scores high on the hardest item, then that person scores high on all the other easier items. If a person scores low on the easiest item, then that person will score low on all the other harder items. In a practical situation, as was the case for these twelve Guttman Scales, the response patterns were not in perfect step-type arrangement, but they were all very acceptable. When the response patterns fit a Guttman pattern, then

this is strong evidence for a unidimensional scale (see Fabrigar & MacGregor, 2007). In Guttman Scales, the total score is non-linear (although the scores are ordered) and are used as the person measure of the variable. This is because equal differences between different total scores on the Guttman Scales do not represent equal amounts of the variable being measured. There were twelve Guttman Scales resulting in 144 (12×12) correlations or 66 ($12 \times 11/2$) effectively different correlations.

The twelve Guttman Scale scores were then used to calculate 66 zero-order, inter-correlations (Pearson Product-Moment Correlations) between and amongst the twelve criteria of formal school registration. The inter-correlations are presented in five groups (see Tables 8.3, 8.4, 8.5, 8.6 and 8.8)). Technically, Pearson-Moment correlations are only computed between linear measures but, for the purpose used here, the Guttman Scales can be treated as though they are linear scales without any serious misinterpretation for the correlations. The Guttman Scale scores were then used to present a number of cross-tabulations of the scores against the context variables. These cross-tabulations are presented later in Chapter Ten. The present chapter concludes with a summary of the main findings from the correlation analysis.

Guttman Scales for Actual Improvements

For the Guttman Scales, the response categories were scored as follows: there was no improvement due to school registration (scored 1); improvement was not due to school registration (scored 2); there was some improvement due to school registration (scored 3); and there was significant improvement due to school registration (scored 4). The Guttman Scale for School Governance is given in Table 8.1 and that for Disputes and Complaints in Table 8.2.

The items for School Governance, in order of difficulty from easy to hard, are:

Item 10 (**easiest**), The School Council's understanding of the distinction between governance and management improved due to formal school registration;

Item 2, The actual efficiency of School Council meetings improved due to formal school registration;

Item 8, The actual expertise and skills of the School Council members improved due to formal school registration;

Item 4, The actual School Council's appointment and review of management staff improved due to formal school registration; and

Item 6 (**hardest**), The Actual School Council's community and public relations improved due to formal school registration (item 6).

In Chapter Seven, items 2 and 4 did not fit the Rasch Measurement Model and were deleted from that analysis, but they are included in the Guttman Scale for School Governance (see Table 8.1). In the Rasch Scale, items 8 and 10 were found to be in the easy block of items and item 6 was found to be in the hard block of items and this is consistent with the Guttman Scale item difficulty order for School Governance in Table 8.1. However, the Rasch analysis creates a linear scale and shows how much harder, for example, is item 6 than the other items whereas the Guttman scale is non-linear and doesn't say how much harder is item 6 – it just says that it is harder than the other items in that scale.

Table 8.1 Guttman Scale Scores – School Governance (N=73)

Name ID	Easiest Item			Hardest Item		total score
	Item 10 easiest	Item 2	Item 8	Item 4	Item 6 hardest	
21	4	4	4	3	3	18
1	4	3	3	4	3	17
56	4	4	3	3	3	17
91	4	4	4	4	2	17
99	4	3	3	3	3	16
101	4	3	2	4	3	16
80	3	2	4	3	3	15
86	3	3	3	3	3	15
100	4	4	2	3	2	15
65	3	3	3	4	1	14
62	3	3	1	3	3	13
76	4	3	2	2	2	13
83	3	3	2	3	2	13
85	3	3	3	1	3	13
4	2	3	3	1	3	12
75	3	2	3	2	2	12
87	2	3	2	2	3	12
9	2	3	1	3	2	11
26	1	3	3	1	3	11
29	3	2	2	2	2	11
90	3	2	3	1	2	11
2	2	2	2	2	2	10
12	2	2	2	2	2	10
60	3	1	4	1	1	10
68	2	3	3	1	1	10
74	2	3	3	1	1	10
78	3	1	4	1	1	10
88	2	2	2	2	2	10
96	3	3	2	1	1	10
7	2	2	1	2	2	9
34	2	2	1	2	2	9
36	3	1	1	3	1	9
44	3	2	2	1	1	9
51	3	2	1	2	1	9
52	3	2	2	1	1	9
66	1	3	1	3	1	9
81	2	2	1	2	2	9
89	3	1	3	1	1	9
92	1	3	1	1	3	9
93	2	1	3	2	1	9
97	1	2	2	2	2	9
23	3	1	1	2	1	8
38	2	3	1	1	1	8
59	1	2	3	1	1	8
10	3	1	1	1	1	7
42	1	1	1	3	1	7
49	3	1	1	1	1	7
50	3	1	1	1	1	7
54	2	1	1	1	2	7
57	3	1	1	1	1	7
67	1	1	1	2	2	7
95	1	1	3	1	1	7
102	2	1	1	2	1	7
3	2	1	1	1	1	6
84	1	1	1	1	2	6
103	1	1	1	2	1	6
5	1	1	1	1	1	5
6	1	1	1	1	1	5
8	1	1	1	1	1	5
11	1	1	1	1	1	5
19	1	1	1	1	1	5
25	1	1	1	1	1	5
27	1	1	1	1	1	5
28	1	1	1	1	1	5
43	1	1	1	1	1	5
53	1	1	1	1	1	5
55	1	1	1	1	1	5
58	1	1	1	1	1	5
73	1	1	1	1	1	5
82	1	1	1	1	1	5
94	1	1	1	1	1	5
98	1	1	1	1	1	5
104	1	1	1	1	1	5
	157	138	133	125	117	

The Guttman Scale for Disputes and Complaints is given in Table 8.2. The items, in order of difficulty from easy to hard, are:

Item 104 (**easiest**), The actual school's disputes and complaints procedures improved due to formal school registration;

Item 106, The school's actual commitment to the principles of procedural fairness improved due to formal school registration;

Item 108, Actual parental satisfaction with the school's disputes and complaints procedures improved due to formal school registration;

Item 110, The actual school's public relations on matters dealing with disputes and complaints improved due to formal school registration; and

Item 102 (**hardest**), There was an actual reduction in complaints registered at school improved due to formal school registration.

The order of these items in the Guttman Scale for Disputes and Complaints can be compared to that in the Rasch-Created Scale (see Chapter Six). Items 104 and 106 were found to be in the easy block of items from the Rasch Scale and items 108, 110 and 102 were found to be in the hard block of items from the Rasch Scale, and this is consistent with the difficulties in the Guttman Scale. The only difference between the Rasch and Guttman Scale item difficulty order is that items 108 and 110 are reversed, although they are very nearly the same difficulty in the Rasch measure. The Rasch analysis creates a linear scale and shows how much harder is item 102, for example, than the other items, whereas the Guttman scale is non-linear and doesn't say how much harder is item 102 than the other items – just that it is harder than all the other items in that scale.

Table 8.2 Guttman Scale Scores – Disputes and Complaints (N=65)

Name ID	Item 104 easiest	Item 106	Item 108	Item 110	Item 102 hardest	total score
1	3	4	3	3	3	16
92	3	2	3	3	3	14
56	3	3	3	3	1	13
85	3	2	3	3	2	13
99	2	4	3	1	3	13
4	3	3	2	3	1	12
101	3	3	3	1	2	12
103	3	2	3	2	2	12
42	3	2	2	2	2	11
88	3	2	2	2	2	11
90	2	3	2	2	2	11
91	3	2	2	2	2	11
11	4	3	1	1	1	10
54	2	2	2	2	2	10
55	2	2	2	2	2	10
59	2	2	2	2	2	10
68	4	3	1	1	1	10
74	2	2	2	2	2	10
75	2	2	2	3	1	10
76	2	2	2	2	2	10
80	2	2	2	2	2	10
87	2	2	2	2	2	10
89	4	3	1	1	1	10
100	3	2	2	1	2	10
29	3	3	1	1	1	9
60	3	3	1	1	1	9
81	3	1	2	1	2	9
95	3	3	1	1	1	9
97	3	1	2	2	1	9
51	1	2	1	2	2	8
66	2	1	2	2	1	8
102	3	1	1	2	1	8
7	2	2	1	1	1	7
9	3	1	1	1	1	7
10	3	1	1	1	1	7
25	3	1	1	1	1	7
50	3	1	1	1	1	7
57	2	2	1	1	1	7
65	2	2	1	1	1	7
73	1	1	2	2	1	7
93	3	1	1	1	1	7
96	1	3	1	1	1	7
98	3	1	1	1	1	7
2	2	1	1	1	1	6
83	1	2	1	1	1	6
3	1	1	1	1	1	5
5	1	1	1	1	1	5
6	1	1	1	1	1	5
8	1	1	1	1	1	5
23	1	1	1	1	1	5
26	1	1	1	1	1	5
27	1	1	1	1	1	5
28	1	1	1	1	1	5
36	1	1	1	1	1	5
44	1	1	1	1	1	5
49	1	1	1	1	1	5
58	1	1	1	1	1	5
62	1	1	1	1	1	5
67	1	1	1	1	1	5
78	1	1	1	1	1	5
82	1	1	1	1	1	5
84	1	1	1	1	1	5
86	1	1	1	1	1	5
94	1	1	1	1	1	5
104	1	1	1	1	1	5
	135	113	97	94	88	

Zero-Order Inter-Correlations

The zero-order inter-correlations between and amongst the first six registration criteria, based on the Guttman scores, are given in Table 8.3. Moderately high positive correlations were found between:

1. Actual Improvements in School Governance and Actual Improvements in School Staff Matters ($r=+0.749$, representing 56% common variance); and
2. Actual Improvements in School Governance and Actual Improvements in School Financial Viability ($r=+0.658$, representing 43% common variance); and
3. Actual Improvements in School Enrolment & Attendance and Actual Improvements in the Number of Students ($r=+0.648$ representing 42% common variance); and
4. Actual School Improvements in School Staff Matters and Actual Improvements in School Financial Ability ($r=+0.685$ representing 47% common variance); and
5. Actual School Improvements in School Staff Matters and Actual Improvements in School Enrolment & Attendance ($r=+0.620$ representing 38% common variance).

Moderate positive correlations were found between:

6. Actual School Improvements in School Staff Matters and Actual Improvements in the Numbers of Students ($r=+0.581$ representing 34% common variance); and
7. Actual School Improvements in School Financial Viability and Actual Improvements in the Numbers of Students ($r=+0.562$ representing 32% common variance); and
8. Actual Improvements in School Governance and Actual Improvements in School Enrolment & Attendance ($r=+0.535$, representing 29% common variance); and
9. Actual School Improvements in School Financial Viability and Actual Improvements in School Enrolment & Attendance ($r=+0.521$ representing 27% common variance); and
10. Actual Improvements in School Instructional Time and Actual Improvement in Numbers of Students ($r=+0.412$ representing 17% common variance).

Low positive correlations were found between:

11. Actual Improvements in School Governance and Actual Improvements in the Number of Students ($r=+0.342$, representing 12% common variance); and
12. Actual School Improvements in Instructional Time and Actual Improvements in School Enrolment & Attendance ($r=+0.343$ representing 12% common variance); and
13. Actual School Improvements in School Financial Viability and Actual Improvements in School Instructional Time ($r=+0.337$ representing 11% common variance); and
14. Actual School Improvements in Instructional Time Due to Formal School Registration and Actual Improvements in School Staff Matters Due to Formal School Registration ($r=+0.265$ representing 7% common variance); and
15. Actual School Improvements in School Governance and Actual Improvements in School Instructional Time ($r=+0.249$ representing 6% common variance).

Table 8.3 Correlations Between Criteria 1 and 6 of School Registration Causing Actual School Improvement (N=59).

PEARSON CORRELATIONS						
Criteria	Actual SG	Actual SFV	Actual E&A	Actual NS	Actual IT	Actual SS
School Governance (ACG)	1					
School Financial Viability (SFV)	0.658	1				
School Enrolment & Attendance (AE&A)	0.535	0.521	1			
Numbers of Students (ANS)	0.342	0.562	0.648	1		
Instructional Time (AIT)	0.249	0.337	0.343	0.402	1	
School Staff Matters (ASS)	0.749	0.685	0.620	0.581	0.265	1
Std. Deviations: ASG = 3.42, ASFV = 2.86, AE&A = 2.897, ANS = 2.35, AIT = 2.29, ASS = 3.03						

It is not inferred from these correlations that there is necessarily a direct causal effect between these variables as they could be linked by another variable or the

variables are related to all six aspects, most probably some overall general variable relating to school improvement, such as measured by the Rasch Scale created in Chapter Six. This variable might be called Actual General School Improvements Due to Formal School Registration.

Although uncertain, the reason for some moderately low correlations may be linked to another variable related to the legislative constraints placed on School Instructional Time. It is a pre-determined condition set by the Minister of Education, reducing the potential for actual improvements in instructional time due to formal school registration.

Table 8.4 Correlation Matrix for Criteria 7 and 8 Against Criteria 1,2,3,4,5,6 and 7 of School Registration Causing Actual School Improvement (N=59).

PEARSON CORRELATIONS		
Criteria	Actual School Infrastructure	Actual School Curriculum
School Governance (ACG)	0.546	0.551
School Financial Viability (SFV)	0.564	0.390
School Enrolment & Attendance (AE&A)	0.661	0.569
Numbers of Students (ANS)	0.567	0.467
Instructional Time (AIT)	0.505	0.258
School Staff Matters (ASS)	0.595	0.607
School Infrastructure(ASI)	1	0.518
Standard Deviations: ASI = 3.95 ASC = 3.61		
Std. Deviations: ASG = 3.42, ASFV = 2.86, AE&A = 2.897, ANS = 2.35, AIT = 2.29, ASS = 3.03		

Moderately high positive correlations were found between:

16. Actual Improvements in School Enrolment &Attendance and Actual Improvements in School Infrastructure ($r=+0.661$, representing 44% common variance); and

17. Actual Improvements in School Staff Matters and Actual Improvements in School Curriculum ($r=+0.607$, representing 37% common variance); and

18. Actual Improvements in School Staff Matters and Actual Improvements in School Infrastructure ($r=+0.595$, representing 35% common variance).

Moderate positive correlations were found between:

19. Actual School Improvements in School Enrolment & Attendance and Actual Improvements in School Curriculum ($r=+0.569$ representing 32% common variance);

20. Actual School Improvements in School Infrastructure and Actual Improvements in the Numbers of Students ($r=+0.567$ representing 32% common variance); and

21. Actual School Improvements in School Infrastructure and Actual Improvements Financial Viability ($r=+0.564$ representing 32% common variance); and

22. Actual School Improvements in School Curriculum and Actual Improvements in School Governance ($r=+0.551$ representing 30% common variance); and

23. Actual School Improvements in School Infrastructure and Actual Improvements in School Governance ($r=+0.546$ representing 30% common variance); and

24. Actual School Improvements in School Infrastructure and Actual Improvements in School Curriculum ($r=+0.518$ representing 27% common variance); and

25. Actual School Improvements in School Infrastructure and Actual Improvements in Instructional Time ($r=+0.505$ representing 25% common variance).

Low positive correlations were found between:

26. Actual Improvements in School Curriculum and Actual Improvements in the Number of Students ($r=+0.467$, representing 22% common variance); and

27. Actual Improvements in School Curriculum and Actual Improvements in School Financial Viability ($r=+0.390$, representing 15% common variance); and

28. Actual Improvements in School Curriculum and Actual Improvements in Instructional Time ($r=+0.258$, representing 7% common variance).

Many school administrators (approximately 80%) made a direct reference to ‘giving the school a facelift’ just prior to the inspection of the school by the official School Registration Panel. In other words, School Administrators believed that there were actual improvements in school infrastructure that did occur due to formal school registration. A low positive correlation was found between Actual Improvements in School Curriculum Due to Formal School Registration and Actual Improvements in Instruction Time Due to Formal School Registration ($r=+0.258$, representing 7% common variance). The discrepancy between the comments on improvements and the correlations is due to a different focus – one focuses on school infrastructure and the other focuses on instruction time. The latter is proscribed by the Minister for Education and can’t be improved much.

Table 8.5 Correlation Matrix for Criteria 9 and 10 Against Criteria 1,2,3,4,5,6,7,8 and 9 of School Registration Causing Actual School Improvement (N=59).

PEARSON CORRELATIONS		
Criteria	Actual Student Learning Outcomes	Actual Care for Students
School Governance (ACG)	0.496	0.670
School Financial Viability (SFV)	0.452	0.625
School Enrolment & Attendance (ASE&A)	0.533	0.645
Numbers of Students (ANS)	0.659	0.680
Instructional Time (AIT)	0.480	0.486
School Staff Matters (ASS)	0.578	0.726
School Infrastructure(ASI)	0.602	0.639
School Curriculum (ASC)	0.562	0.596
Student Learning Outcomes(ASLO)	1	0.720
Standard Deviations: ASLO = 3.05 ACfS = 2.71		
Std. Deviations: ASG = 3.42, ASFV = 2.86, AE&A = 2.897, ANS = 2.35, AIT = 2.29, ASS = 3.03		

Moderately high positive correlations were found between:

29. Actual Improvements in School Staff Matters and Actual Improvements in Care for Students ($r=+0.726$, representing 53% common variance);
30. Actual Improvements in Student Learning Outcomes and Actual Improvements in Care for Students ($r=+0.720$, representing 52% common variance);
31. Actual Improvements in Numbers of Students and Actual Improvements in Care for Students ($r=+0.680$, representing 46% common variance);
32. Actual Improvements in School Governance and Actual Improvements in Care for Students ($r=+0.670$, representing 45% common variance);
33. Actual Improvements in Numbers of Students and Actual Improvements in Student Learning Outcomes ($r=+0.659$, representing 43% common variance);
34. Actual Improvements in School Enrolment & Attendance and Actual Improvements in Care for Students ($r=+0.645$, representing 42% common variance);
35. Actual Improvements in School Infrastructure and Actual Improvements in Care for Students ($r=+0.639$, representing 41% common variance);
36. Actual Improvements in School Financial Viability and Actual Improvements in Care for Students ($r=+0.625$, representing 39% common variance);
37. Actual Improvements in School Infrastructure and Actual Improvements in Learning Outcomes; and
38. Actual Improvements in School Curriculum and Actual Improvements in Care for Students ($r=+0.596$, representing 36% common variance).

Moderate positive correlations were found between:

- 39. Actual School Improvements in School Staff Matters and Actual Improvements in Student Learning Outcomes ($r=+0.578$ representing 33% common variance);
- 40. Actual School Improvements in Student Learning Outcomes and Actual Improvements in School Curriculum ($r=+0.562$ representing 32% common variance);
- 41. Actual School Improvements in School Enrolment & Attendance and Actual Improvements in Student Learning Outcomes ($r=+0.533$ representing 28% common variance);
- 42. Actual School Improvements in School Governance and Actual Improvements in Student Learning Outcomes ($r=+0.496$ representing 25% common variance);
- 43. Actual Improvements in Instructional Time and Actual Improvements in Care for Students ($r=+0.486$, representing 24% common variance);
- 44. Actual School Improvements in Instructional Time and Actual Improvements in Student Learning Outcomes ($r=+0.490$ representing 23% common variance);
- 45. Actual School Improvements in School Financial Viability and Actual Improvements in Student Learning Outcomes ($r=+0.452$ representing 20% common variance).

Although uncertain, it is strongly possible that these variables are linked together by a third variable relating to school improvement, as observed by the qualitative analysis in Chapter Eleven and the Rasch measures in Chapters Six and Seven. A high number of school administrators (approximately 70%) made a direct reference to Care for Students in the development of school policies related to Actual School Improvements that were due to Formal School Registration. In Table 8.5, Criterion 9, Care for Students, exhibits the highest-overall positive correlations between it and the other Criteria of formal school registration. It is conceivable that the unique character

of many independent schools, schools with a specific philosophy or ethos with a religious persuasion, may have contributed to the strong correlations for variables relating to Actual Improvement in Care for Students Due to Formal School Registration.

Table 8.6 Correlation Matrix for Criterion 11 Against Criteria 1,2,3,4,5,6,7,8,9 and 10 of School Registration Causing Actual School Improvement (N=59).

PEARSON CORRELATIONS	
Criteria	Actual Disputes and Complaints
School Governance (ACG)	0.532
School Financial Viability (SFV)	0.592
School Enrolment & Attendance (ASE&A)	0.612
Numbers of Students (ANS)	0.669
Instructional Time (AIT)	0.270
School Staff Matters (ASS)	0.734
School Infrastructure(ASI)	0.497
School Curriculum (ASC)	0.589
Student Learning Outcomes(ASLO)	0.594
Care for Students(ACfS)	0.691
Standard Deviations: ADC = 2.66	
Std. Deviations: ASG = 3.42, ASFV = 2.86, AE&A = 2.897, ANS = 2.35, AIT = 2.29, ASS = 3.03	

Moderately high positive correlations were found between:

46. Actual Improvements in School Staff Matters and Actual Improvements in Disputes and Complaints ($r=+0.734$, representing 54% common variance); and
47. Actual Improvements in Care for Students and Actual Improvements in Disputes and Complaints ($r=+0.691$, representing 48% common variance).

Moderate positive correlations were found between:

- 48. Actual School Improvements in Disputes and Complaints and Actual Improvements in Numbers of Students ($r=+0.669$ representing 45% common variance);
- 49. Actual School Improvements in Disputes and Complaints and Actual Improvements in School Enrolment & Attendance ($r=+0.612$ representing 37% common variance);
- 50. Actual School Improvements in Disputes and Complaints and Actual Improvements in Student Learning Outcomes ($r=+0.594$ representing 35% common variance);
- 51. Actual School Improvements in Disputes and Complaints and Actual Improvements in School Financial Viability ($r=+0.592$ representing 35% common variance);
- 52. Actual School Improvements in Disputes and Complaints and Actual Improvements in School Curriculum ($r=+0.589$ representing 35% common variance);
- 53. Actual School Improvements in Disputes and Complaints and Actual Improvements in School Governance ($r=+0.532$ representing 28% common variance); and
- 54. Actual School Improvements in Disputes and Complaints and Actual Improvements in School Infrastructure ($r=+0.497$ representing 25% common variance).

Low positive correlations were found between:

- 55. Actual Improvements in Disputes and Complaints and Actual Improvements in Instructional Time ($r=+0.270$, representing 7% common variance);

The highest positive correlation was found between Actual Improvements in Disputes and Complaints Due to Formal School Registration and Actual Improvement in School Staff Matters Due to Formal School Registration ($r=+0.734$, representing 54% common variance). This suggests that in independent schools where staff supposedly care for students more and where school staff supposedly matters more, there are improvements in school learning outcomes and reductions in school disputes and

complaints, and that formal school registration relating to these criteria has a causal positive influence on both schools and students.

Once again, the many inter-correlations indicate that they are possibly due to a third variable such as the Rasch measured one in Chapter Six. The large majority of these items fitted a linear Rasch measurement model and thus were aligned from easy to hard on that scale. Hence it may not be surprising that sub-sets of these items are inter-correlated.

Table 8.7 Correlation Matrix for Criteria 12 Against Criteria 1,2,3,4,5,6,7,8,9,10 and 11 of School Registration Causing Actual School Improvement (N=59).

PEARSON CORRELATIONS	
Criteria	Actual Legal Compliance
School Governance (ACG)	0.624
School Financial Viability (SFV)	0.466
School Enrolment & Attendance (ASE&A)	0.464
Numbers of Students (ANS)	0.428
Instructional Time (AIT)	0.349
School Staff Matters (ASS)	0.594
School Infrastructure(ASI)	0.563
School Curriculum (ASC)	0.595
Student Learning Outcomes(ASLO)	0.487
Care for Students(ACfS)	0.676
Disputes and Complaints(ADC)	0.546
Standard Deviations: ALC = 4.04	
Std. Deviations: ASG = 3.42, ASFV = 2.86, AE&A = 2.897, ANS = 2.35, AIT = 2.29, ASS = 3.03	

Moderately high positive correlations were found between:

- 56. Actual Improvements in Legal Compliance and Actual Improvements in Care for Students ($r=+0.676$, representing 46% common variance);
- 57. Actual Improvements in Legal Compliance and Actual Improvements in School Governance ($r=+0.624$, representing 39% common variance);
- 58. Actual Improvements in Legal Compliance and Actual Improvements in School Staff matters ($r=+0.594$, representing 35% common variance); and
- 59. Actual Improvements in Legal Compliance and Actual Improvements in School Curriculum ($r=+0.595$, representing 35% common variance).

Moderate positive correlations were found between:

- 60. Actual School Improvements in Legal Compliance and Actual Improvements in School Infrastructure ($r=+0.563$ representing 32% common variance);
- 61. Actual School Improvements in legal Compliance and Actual Improvements in Disputes and Complaints ($r=+0.546$ representing 30% common variance);
- 62. Actual School Improvements in Legal Compliance and Actual Improvements in School Learning Outcomes ($r=+0.487$ representing 24% common variance);
- 63. Actual School Improvements in Legal Compliance and Actual Improvements in School Financial Viability ($r=+0.466$ representing 22% common variance);
- 64. Actual School Improvements in Legal Compliance and Actual Improvements in School Enrolment & Attendance ($r=+0.464$ representing 22% common variance); and
- 65. Actual School Improvements in Legal Compliance and Actual Improvements in School Financial Viability ($r=+0.428$ representing 18% common variance).

A low positive correlation was found between:

66. Actual School Improvements in Legal Compliance and Actual Improvements in School Instructional Time ($r=+0.349$ representing 12% common variance).

The highest positive correlation in this group again involved Actual Improvements in Care for Students and Actual Improvements in Legal Compliance ($r=+0.676$, representing 46% common variance). This is consistent with the previous correlations suggesting that in independent schools where staff supposedly care for students more and where school ethos is often based on religious grounds, there are improvements in school learning outcomes and reductions in school disputes and complaints, and that formal school registration relating to these aspects has a causal positive influence on schools and students.

Summary of Main Findings

Using Guttman Scale non-linear scores (Fabrigar & MacGregor, 2007; Guttman, 1950; Guttman, 1944), this chapter examined the inter-relationships between and amongst the twelve criteria of School Administrators Beliefs that Actual School Improvements Were Due To Formal School Registration. The Guttman Scale scores were used to calculate the zero-order inter-correlations (Pearson Product-Moment Correlations) between and amongst the twelve Guttman Scale scores that directly measured each of the twelve criteria. The zero-order inter-correlations ranged from a low positive value ($r=+0.249$, representing 6% common variance) to a moderately high positive value ($r=+0.734$, representing 54% common variance). While correlations are generally considered a necessary, but not sufficient condition, for suggesting a causal inference, other evidence given by the School Administrators, such as the qualitative comments described in Chapter Twelve, strongly suggests that formal registration did

have a positive influence on various criteria of school improvement. For criteria such as Care for Students and School Staff Matters which often have a special significance in many independent schools, because the schools are based on a particular religious ethos, some of the correlations were moderately highly positive and causally suggestive. The discussion of this data analysis and its findings is presented in Chapter 13.

The main findings are now briefly summarised.

1. The twelve Guttman Scales – one for each registration criterion - have an acceptable step-type arrangement, providing strong evidence of a unidimensional scale for each of the twelve criteria of Actual School Improvements Due to Formal School Registration (see Table 8.1 & Table 8.2, Appendices 3A to 3J).
2. There was agreement between the Guttman Scale scores and the Rasch Measurement Model (see Chapter 6) regarding the order of difficulty for the items related to the Actual School Improvements Due to Formal School Registration. For example, both measures listed item 6, *the Actual School Council's community and public relations*, as the hardest School Governance improvement item.
3. There was agreement between the Guttman Scale scores and the Nvivo10 qualitative analysis (see Chapters 11 & 12) regarding the order of difficulty for the items related to the Actual School Improvement Due to Formal School Registration. For example, School Administrator references to the development of policies suggested improvement to Actual School Improvements in Care for Students.
4. Moderately high positive correlations were found between the following twelve criteria of formal school registration;

School Governance & School Staff	($r=+0.749$, rep. 56% common variance)
School Governance & Finance Viability	($r=+0.658$, rep. 43% common variance)

Disputes & Complaints & School Staff (r=+0.734, rep. 54% common variance)

School Staff & Care for Students (r=+0.726, rep. 53% common variance)

Care for Students & Learning Outcomes (r=+0.720, rep. 52% common variance)

Care for Students & Disputes & Complaints (r=+0.691 rep. 48% common variance)

Learning Outcomes & School Curriculum (r=+0.562 rep. 32% common variance)

5. Moderately low positive correlations were found between two of the twelve criteria of formal school registration;

Instructional Time & School Staff Matters (r=+0.265, rep. 7% common variance)

Instructional Time and School Governance (r=+0.249, rep. 6% common variance).

In the next chapter, the data analysis continues with an examination of the inter-relationship between and amongst the twelve criteria of School Administrators Beliefs that

Expected School Improvements Were Due to Formal School Registration. It forms the counterpart of this data analysis by considering '*what School Administrators expected would happen, due to school registration*'.

CHAPTER NINE

DATA ANALYSIS (PART 4) - GUTTMAN SCALES (EXPECTED IMPROVEMENTS) AND THEIR INTER-CORRELATIONS

In this chapter, the data analysis presents an investigation of the inter-relationships between and amongst the twelve criteria of school registration and School Administrators' Beliefs that Expected School Improvements Would Occur Due to Formal School Registration. The twelve aspects of formal school registration are: (1) School Governance; (2) School Financial Viability; (3) Enrolment & Attendance; (4) Number of Students; (5) Instructional Time; (6) School Staff; (7) School Infrastructure; (8) School Curriculum; (9) Student Learning Outcomes; (10) Care for Students; (11) Disputes and Complaints; and (12) Legal Compliance. The data analysis relates to data on this questionnaire perspective '*what I expected would happen, due to school registration*'. It forms the counterpart of the previous data analysis regarding the perspective, '*what actually happened, due to school registration*'.

As in the previous chapter, it was not possible to create Rasch linear measures for each of the twelve criteria because of the small number of items (five) and small sample size ($N=74$), so the next best scale, namely a Guttman Scale, was created (Fabrigar & MacGregor, 2007; Guttman, 1950; Guttman, 1944). The items in these Guttman Scales were aligned from easy to hard horizontally and the person scores were arranged vertically from high (top) to low (bottom) by items. If the data were to fit a Guttman pattern accurately, then the pattern of person responses for each item would be in a perfect step-type arrangement. Although imperfect, the response patterns for these twelve Guttman Scales, form an acceptable step-type arrangement. The response

patterns do fit a Guttman pattern, lending strong evidence for a unidimensional scale (see Fabrigar & MacGregor, 2007) There were twelve Guttman Scales resulting in 144 (12 x 12) correlations or 66 (12 x 11/2) effectively different correlations.

The twelve Guttman Scale scores were then used to calculate 66 zero-order inter-correlations (Pearson Product-Moment Correlations) between and amongst the twelve criteria of formal registration. These inter-correlations are presented in five groups (see Tables 9.3, 9.4, 9.5, 9.6, and 9.7) Technically, Pearson-Moment correlations are only computed between linear measures but, for the purpose used here, the Guttman Scales can be treated as though they are linear scales without any serious misinterpretation for the correlations. The Guttman Scale scores were then used to present a number of cross-tabulations of the scores against the context variables. These cross-tabulations are presented later in Chapter Ten. The present chapter concludes with a summary of the main findings from the correlation analysis.

Guttman Scales for Expected Improvements

For the Guttman Scales, the response categories were scored as follows: there was no improvement due to school registration (scored 1); improvement was not due to school registration (scored 2); there was some improvement due to school registration (scored 3); and there was significant improvement due to school registration (scored 4). The Guttman Scale for School Governance is given in Table 9.1 and that for School Financial Viability in Table 9.2. The other Guttman Scales are given in Appendices 4A to 4J and are not included in the text to reduce repetition.

The items for School Governance, in order of difficulty, from easy to hard, are:

Item 9 (**easiest**); The School Council's understanding of the distinction between governance and management improved due to formal school registration;

Item 1: The efficiency of School Council meetings was expected to improve due to formal school registration);

Item 7: The expertise and skills of the School Council members were expected to improve due to formal school registration;

Item 3: The School Council's appointment and review of management staff were expected to improve due to formal school registration;

Item 5 (**hardest**): The School Council's community and public relations were expected to improve due to formal school registration.

The order of difficulty for the Expected Improvements on School Governances matched the order of difficulty for the Actual Improvements on School Governance found in Chapter Eight.

Table 9.1 includes items 1 and 3 which did not fit the Rasch Measurement Model and were deleted from that analysis (see Chapter Seven). In the Rasch Scale, items 7 and 9 were found to be in the easy block of items and item 5 was found to be in the hard block of items. So items 5, 7 and 9 are in the same Guttman Scale order as they are in the Rasch Scale. However, the Rasch analysis creates a linear scale and shows how much harder is item five than the other items, whereas the Guttman scale is non-linear and doesn't say how much harder is item five.

Table 9.1 Guttman Scale Scores – School Governance (N=74)

Name ID	Item 9 easiest	Item 1	Item 7	Item 3	Item 5 hardest	total score
100	4	4	3	4	3	18
57	4	4	3	3	3	17
60	4	2	4	4	3	17
91	4	4	4	3	2	17
92	4	4	4	3	2	17
10	4	4	1	4	3	16
22	3	3	3	3	3	15
56	3	3	3	3	3	15
81	3	3	3	3	3	15
87	3	3	3	3	3	15
101	4	4	2	3	2	15
43	3	3	3	3	2	14
66	3	3	3	4	1	14
102	3	3	2	3	3	14
63	3	3	1	3	3	13
5	2	3	3	1	3	12
76	3	2	3	2	2	12
77	3	3	2	2	2	12
84	3	2	2	3	2	12
88	2	3	2	2	3	12
94	3	3	3	2	1	12
24	3	3	1	3	1	11
52	3	2	3	2	1	11
13	2	2	2	2	2	10
45	3	2	1	2	2	10
69	2	3	3	1	1	10
79	3	1	4	1	1	10
82	2	2	1	3	2	10
84	2	2	2	2	2	10
1	2	1	2	3	1	9
8	2	2	1	2	2	9
27	1	1	3	1	3	9
37	3	1	1	3	1	9
53	3	2	2	1	1	9
90	3	1	3	1	1	9
93	1	3	1	1	3	9
97	2	3	2	1	1	9
11	3	2	1	1	1	8
39	2	3	1	1	1	8
75	2	3	1	1	1	8
7	3	1	1	1	1	7
30	3	1	1	1	1	7
35	3	1	1	1	1	7
44	1	1	1	1	3	7
50	3	1	1	1	1	7
51	3	1	1	1	1	7
55	2	1	1	1	2	7
58	3	1	1	1	1	7
67	1	1	1	3	1	7
96	1	1	3	1	1	7
3	1	2	1	1	1	6
4	1	2	1	1	1	6
85	1	1	1	1	2	6
86	1	1	2	1	1	6
104	1	1	2	1	1	6
6	1	1	1	1	1	5
9	1	1	1	1	1	5
12	1	1	1	1	1	5
20	1	1	1	1	1	5
26	1	1	1	1	1	5
28	1	1	1	1	1	5
29	1	1	1	1	1	5
54	1	1	1	1	1	5
59	1	1	1	1	1	5
61	1	1	1	1	1	5
68	1	1	1	1	1	5
74	1	1	1	1	1	5
83	1	1	1	1	1	5
95	1	1	1	1	1	5
98	1	1	1	1	1	5
99	1	1	1	1	1	5
103	1	1	1	1	1	5
105	1	1	1	1	1	5
	158	140	129	128	117	

The Guttman Scale for School Financial Viability is given in Table 9.2. The items, in order of difficulty from easy to hard, are:

Item 11 (**easiest**): The standard and quality of the school's financial management were expected to improve due to formal school registration;

Item 17: The school's financial risk assessment and analysis were expected to improve due to formal school registration;

Item 15: The school's long term financial planning process and results were expected to improve due to formal school registration;

Item 19: The school's final (or end of year) income and expenditure position were expected to improve due to formal school registration;

Item 13 (**hardest**): The expertise and qualifications of the school's financial management staff were expected to improve due to formal school registration.

In Chapter Eight, item 17 did not fit the Rasch Measurement Model and was deleted from that analysis. In the Rasch Scale, items 11 and 15 were found to be in the easy block of items and items 19 and 13 were found in the hard block of items, and this is similar to the difficulties in the Guttman Scale. The only difference between the Rasch and Guttman Scale item difficulty order is that the items 13 and 19 are reversed, although they are very nearly the same difficulty in the Rasch measure. The Rasch analysis creates a linear scale and shows how much harder is item 13 than the other items whereas the Guttman scale is non-linear and doesn't say how much harder is item 13.

In Chapter 11, the analysis of qualitative data makes a specific node reference to the expertise and qualification of the school's financial management staff. This node suggests support for the results of the Rasch Scale and the Guttman Scales.

Table 9.2 Guttman Scale Scores – School Financial Viability (N=65)

Name ID	Item 11 easiest	Item 17	Item 15	Item 19	Item 13 hardest	Total Score
56	4	4	4	3	3	18
83	4	3	3	4	4	18
99	2	4	4	4	3	17
89	4	3	3	3	3	16
92	4	3	3	3	3	16
21	3	3	3	3	3	15
42	3	3	3	3	3	15
100	4	3	3	2	2	14
80	4	3	3	2	1	13
87	3	2	3	3	2	13
54	3	3	2	2	2	12
81	3	3	2	2	2	12
26	3	3	3	1	1	11
55	3	2	2	1	3	11
75	3	2	2	2	2	11
101	2	2	3	2	2	11
11	2	3	2	2	1	10
12	2	2	2	2	2	10
44	3	1	2	1	3	10
59	2	2	2	2	2	10
86	2	2	2	2	2	10
88	2	2	2	2	2	10
90	3	2	2	2	1	10
103	2	2	2	2	2	10
4	1	3	3	1	1	9
65	3	3	1	1	1	9
93	1	2	3	2	1	9
6	1	4	1	1	1	8
7	1	2	2	2	1	8
68	1	1	4	1	1	8
91	2	1	2	2	1	8
1	1	1	2	1	2	7
23	3	1	1	1	1	7
29	1	1	3	1	1	7
50	3	1	1	1	1	7
51	1	2	2	1	1	7
60	1	3	1	1	1	7
66	1	3	1	1	1	7
74	2	1	2	1	1	7
82	1	3	1	1	1	7
85	2	1	2	1	1	7
95	1	1	3	1	1	7
9	1	2	1	1	1	6
28	2	1	1	1	1	6
34	1	1	1	2	1	6
38	2	1	1	1	1	6
2	1	1	1	1	1	5
3	1	1	1	1	1	5
5	1	1	1	1	1	5
8	1	1	1	1	1	5
10	1	1	1	1	1	5
19	1	1	1	1	1	5
25	1	1	1	1	1	5
27	1	1	1	1	1	5
36	1	1	1	1	1	5
49	1	1	1	1	1	5
52	1	1	1	1	1	5
57	1	1	1	1	1	5
58	1	1	1	1	1	5
62	1	1	1	1	1	5
67	1	1	1	1	1	5
73	1	1	1	1	1	5
76	1	1	1	1	1	5
78	1	1	1	1	1	5
84	1	1	1	1	1	5
94	1	1	1	1	1	5
96	1	1	1	1	1	5
97	1	1	1	1	1	5
98	1	1	1	1	1	5
102	1	1	1	1	1	5
104	1	1	1	1	1	5
	128	126	126	106	102	

Zero-Order Inter-Correlations

The zero-order inter-correlations between and amongst the first six registration criteria, based on the Guttman Scales, are given in Table 9.3. Moderately high positive correlations were found between:

1. Expected Improvements in School Financial Viability and Expected Improvements in School Staff Matters ($r=+0.769$, representing 59% common variance); and
2. Expected Improvements in Numbers of Students and Expected Improvements in School Staff Matters ($r=+0.724$, representing 52% common variance); and
3. Expected Improvements in School Staff Matters and Expected Improvements in School Governance ($r=+0.709$, representing 50% common variance); and
4. Expected Improvements in School Financial Viability and Expected Improvements in Numbers of Students ($r=+0.703$, representing 49% common variance); and
5. Expected Improvements in School Governance and Expected Improvements in School Financial Viability ($r=+0.652$, representing 43% common variance); and
6. Expected Improvements in Enrolment and Attendance and Expected Improvements in School Staff Matters ($r=+0.631$, representing 40% common variance); and
7. Expected Improvements in School Enrolment and Attendance and Expected Improvements in Number of Students ($r=+0.630$, representing 40% common variance).

Moderate positive Correlations were found between:

8. Expected Improvements in School Financial Viability and Expected Improvements in School Enrolment and Attendance ($r=+0.559$, representing 31% common variance); and
9. Expected Improvements in Number of Students and Expected Improvements in Instructional Time ($r=+0.511$, representing 26% common variance); and

10. Expected Improvements in School Governance and Expected Improvements in Number of Students ($r=+0.505$, representing 26% common variance); and
11. Expected Improvements in School Governance and Expected Improvements in School Enrolment & Attendance ($r=+0.451$, representing 20% common variance); and
12. Expected Improvement in School Financial Viability and Expected Improvements in Instructional Time ($r=+0.445$, representing 20% common variance).

Low positive correlations were found between:

13. Expected Improvements in School Enrolment & Attendance and Expected Improvements in Instructional Time ($r=+0.346$, representing 12% common variance); and
14. Expected Improvements in Instructional Time and Expected Improvements in School Staff Matters ($r=+0.313$, representing 10% common variance); and
15. Expected Improvements in Instructional Time and Expected Improvements in School Governance ($r=+0.245$, representing 6% common variance).

Table 9.3 Correlations Between Criteria 1 to 6 of School Registration Causing Expected School Improvement (N=59).

PEARSON CORRELATIONS

Criteria	Exp. SG	Exp. SFV	Exp. E&A	Exp. NS	Exp.IT	Exp. SS
School Governance (ECG)	1					
School Financial Viability (SFV)	0.652	1				
School Enrolment & Attendance (ESE&A)	0.451	0.559	1			
Numbers of Students (ENS)	0.505	0.703	0.630	1		
Instructional Time (EIT)	0.245	0.445	0.346	0.511	1	
School Staff Matters (ESS)	0.709	0.769	0.631	0.724	0.313	1
Std. Deviations:	ESG = 3.97,	ESFV = 3.44,	EE&A = 2.99,	ENS = 2.25,	EIT = 2.17,	ESS = 3.30

It is not inferred from these correlations that there is a direct causal effect between these variables as they could be linked by another variable that is related to all three criteria, most probably some overall general variable relating to school improvement, as measured by the Rasch Scale created in Chapter Seven. This variable might be called Expected General School Improvements Due to Formal School Registration.

Although uncertain, the reason for some moderately low correlations may be linked to another variable related to the legislative constraints placed on School Instructional Time. It is a pre-determined condition set by the Minister of Education, reducing the potential for Actual Improvements in Instructional Time Due to Formal School Registration.

Table 9.4 Correlation Matrix for Criteria 7 and 8 Against Criteria Aspects 1, 2, 3, 4, 5, 6, and 7 of School Registration Causing Expected (Exp.) School Improvement (N=59).

PEARSON CORRELATIONS		
Criteria Curriculum	Expected School Infrastructure	Expected School
School Governance (ESG)	0.516	0.433
School Financial Viability(ESFV)	0.750	0.479
School Enrolment & Attendance (EE&A)	0.625	0.462
Numbers of Students (ENS)	0.678	0.487
Instructional Time (EIT)	0.497	0.306
School Staff Matters (ESSM)	0.679	0.602
School Infrastructure (ESI)	1	0.496
Std. Deviations:	ESI = 3.04,	ESC = 3.46

Moderately high positive correlations were found between:

16. Expected Improvements in School Financial Viability and Expected Improvements in School Infrastructure ($r=+0.750$, representing 56% common variance); and
17. Expected Improvements in School Staff Matters and Expected Improvements in School Infrastructure ($r=+0.679$, representing 46% common variance); and
18. Expected Improvements in School Infrastructure and Expected Improvement in Numbers of Students ($r=+0.678$, representing 46% common variance); and
19. Expected Improvements in School Infrastructure and Expected Improvement in School Enrolments & Attendance ($r=+0.625$, representing 39% common variance); and
20. Expected Improvements in School Staff Matters and Expected Improvements in School Curriculum ($r=+0.602$, representing 36% common variance).

Moderate positive correlations were found between:

21. Expected Improvements in School Infrastructure and Expected Improvements in School Governance ($r=+0.516$, representing 27% common variance); and
 22. Expected Improvements in School Infrastructure and Expected Improvements in Instructional Time ($r=+0.497$, representing 25% common variance); and
 23. Expected Improvements in School Infrastructure and Expected Improvements in School Curriculum ($r=+0.496$, representing 25% common variance); and
 24. Expected Improvements in School Curriculum and Expected Improvements in Numbers of Students ($r=+0.487$, representing 24% common variance); and
 25. Expected Improvements in School Curriculum and Expected Improvements in School Financial Viability ($r=+0.479$, representing 23% common variance); and
 26. Expected Improvements in School Enrolment & Attendance and Expected Improvements in School Curriculum ($r=+0.462$, representing 21% common variance);
- and

27. Expected Improvements in School Governance and Expected Improvements in School Curriculum ($r=+0.433$, representing 19% common variance).

Low positive correlation was found between:

28. Expected Improvements in School Infrastructure and Expected Improvements in School Curriculum ($r=+0.306$, representing 9% common variance).

Although uncertain, the moderately high positive correlation between several criteria of School Registration may be linked together by another variable relating to school improvements, as observed by the analysis in Chapter Twelve. A significant number of School Administrators (Approximately 60%) made a direct reference to School Financial Viability, linking Expected Improvements in School Financial Viability and School Infrastructure that were due to formal school registration .

Table 9.5 Correlation Matrix for Criterion 9 and 10 Against Criteria 1, 2, 3, 4, 5, 6, 7, 8, and 9 of School Registration Causing Expected (Exp.) School Improvement (N=59).

PEARSON CORRELATIONS		
Criteria	Expected Student Learning Outcomes	Expected Care for
Students		
School Governance (ESG)	0.459	0.693
School Financial Viability(ESFV)	0.564	0.700
School Enrolment & Attendance (EE&A)	0.504	0.500
Numbers of Students (ENS)	0.655	0.660
Instructional Time (EIT)	0.501	0.478
School Staff Matters (ESSM)	0.668	0.664
School Infrastructure (ESI)	0.620	0.656
School Curriculum (ESC)	0.588	0.528
Student Learning Outcomes (ESLO)	1	0.699
Std. Deviations:	ESLO = 2.96,	ESfC = 2.64

Moderately high positive correlations were found between:

29. Expected Improvements in Care for Students and Expected Improvements in School Financial Viability ($r=+0.700$, representing 49% common variance); and
30. Expected Improvements in Care for Students and Expected Improvements in Student Learning Outcomes ($r=+0.699$, representing 49% common variance); and
31. Expected Improvements in Care for Students and Expected Improvements in School Governance ($r=+0.693$, representing 48% common variance); and
32. Expected Improvements in Student Learning Outcomes and Expected Improvements in School Staff Matters ($r=+0.668$, representing 45% common variance); and
33. Expected Improvements in Care for Students and Expected Improvements in School Staff Matters ($r=+0.664$, representing 44% common variance); and
34. Expected Improvements in Care for Students and Expected Improvements in Numbers of Students ($r=+0.660$, representing 44% common variance); and
35. Expected Improvements in Care for Students and Expected Improvements in School Infrastructure ($r=+0.656$, representing 43% common variance); and
36. Expected Improvements in Student Learning Outcomes and Expected Improvements in Numbers of Students ($r=+0.655$, representing 43% common variance); and
37. Expected Improvements in Student Learning Outcomes and Expected Improvements in School Infrastructure ($r=+0.620$, representing 38% common variance); and
38. Expected Improvements in Student Learning Outcomes and Expected Improvements in School Curriculum ($r=+0.588$, representing 35% common variance).

Moderate positive correlations were found between:

39. Expected Improvements in Student Learning Outcomes and Expected Improvements in School Financial Viability ($r=+0.564$, representing 32% common variance); and

40. Expected Improvements in Care for Students and Expected Improvements in School Curriculum ($r=+0.528$, representing 28% common variance); and
41. Expected Improvements in Student Learning Outcomes and Expected Improvements in School Enrolment & Attendance ($r=+0.504$, representing 25% common variance); and
42. Expected Improvements in Student Learning Outcomes and Expected Improvements in Instructional Time ($r=+0.501$, representing 25% common variance); and
43. Expected Improvements in Care for Students and Expected Improvements in School Enrolment & Attendance ($r=+0.500$, representing 25% common variance); and
44. Expected Improvements in Care for Students and Expected Improvements in Instructional Time ($r=+0.478$, representing 23% common variance); and
45. Expected Improvements in Student Learning Outcomes and Expected Improvements in School Governance ($r=+0.459$, representing 21% common variance).

It is strongly possible that these variables are linked together by a third variable relating to school improvement, as observed by the qualitative analysis in Chapter Twelve. A high number of School Administrators (about 70%) made a direct reference to Care for Students in the development of school policies related to Expected School Improvements that were due to Formal School Registration. In Table 9.5, Criterion 9, Care for Students, exhibits the highest-overall positive correlations between it and the other criteria of Formal School Registration. It is conceivable that the unique character of many independent schools, schools with a specific philosophy or ethos with a religious persuasion, may have contributed to the strong correlations for variables relating to Expected Improvement in Care for Students Due to Formal School Registration.

Table 9.6 Correlation Matrix for Aspects 11 Against 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 of School Registration Causing Expected School Improvement (N=59).

PEARSON CORRELATIONS	
Criteria	Expected Disputes and Complaints (ED&C)
School Governance (ESG)	0.595
School Financial Viability(ESFV)	0.693
School Enrolment & Attendance (EE&A)	0.477
Numbers of Students (ENS)	0.687
Instructional Time (EIT)	0.276
School Staff Matters (ESSM)	0.737
School Infrastructure (ESI)	0.528
School Curriculum (ESC)	0.525
Student Learning Outcomes (ESLO)	0.550
Care for Students (ECFS)	0.709
Std. Deviations:	ED&C = 3.25

Moderately high positive correlations were found between:

46. Expected Improvements in Disputes and Complaints and Expected Improvements in School Staff Matters ($r=+0.737$, representing 54% common variance); and
47. Expected Improvements in Disputes and Complaints and Expected Improvements in Care for Students ($r=+0.709$, representing 50% common variance); and
48. Expected Improvements in Disputes and Complaints and Expected Improvements in School Financial Viability ($r=+0.693$, representing 48% common variance); and

49. Expected Improvements in Disputes and Complaints and Expected Improvements in Student Learning Outcomes ($r=+0.687$, representing 47% common variance).

Moderate positive correlations were found between:

50. Expected Improvements in Disputes and Complaints and Expected Improvements in School Governance ($r=+0.595$, representing 35% common variance); and

51. Expected Improvements in Disputes and Complaints and Expected Improvements in Student Learning Outcomes ($r=+0.550$, representing 30% common variance); and

52. Expected Improvements in Disputes and Complaints and Expected Improvements in School Infrastructure ($r=+0.528$, representing 28% common variance); and

53. Expected Improvements in Disputes and Complaints and Expected Improvements in School Curriculum ($r=+0.525$, representing 28% common variance); and

54. Expected Improvements in Disputes and Complaints and Expected Improvements in School Enrolments & Attendance ($r=+0.477$, representing 23% common variance).

Low positive correlations were found between:

55. Expected Improvements in Disputes and Complaints and Expected Improvements in Instructional Time ($r=+0.276$, representing 8% common variance).

A moderately high positive correlation was found between Expected Improvements in Disputes and Complaints Due to Formal School Registration and Expected Improvements in School Staff Matters Due to Formal School Registration ($r=+0.737$, representing 54% common variance). This suggests that, in independent schools, where staff are alleged to care for students more and, where school staff matters allegedly might be acted upon better, there were expected to be improvements in school learning outcomes and expected reductions in school disputes and complaints,

and that Formal School Registration relating to these criteria would have a causal positive influence on schools and students.

The many inter-correlations found here are also suggested by the Rasch analysis in Chapter Seven. The large majority of items fitted a Rasch Measurement and were aligned from easy to hard. It is, therefore, not surprising that various sub-sets of these items are correlated in separate Guttman scale analyses.

Table 9.7 Correlation Matrix for Criterion 12 Against Criteria 1, 2, 3, 4, 5, 6, 7, 8, 9 10, and 11 of School Registration Causing Expected School Improvement (N=59).

PEARSON CORRELATIONS	
Criteria	Expected Legal Compliance (ELC)
School Governance (ESG)	0.589
School Financial Viability(ESFV)	0.617
School Enrolment & Attendance (EE&A)	0.372
Numbers of Students (ENS)	0.490
Instructional Time (EIT)	0.425
School Staff Matters (ESSM)	0.493
School Infrastructure (ESI)	0.605
School Curriculum (ESC)	0.590
Student Learning Outcomes (ESLO)	0.483
Care for Students (ECFS)	0.659
Disputes and Complaints (EDC)	0.445
Std. Deviation:	ELC = 3.92

Moderately high positive correlations were found:

56. Expected Improvements in Legal Compliance and Expected Improvements in and Care for Students ($r=+0.659$, representing 43% common variance); and
57. Expected Improvements in Legal Compliance and Expected Improvements in School Financial Viability ($r=+0.617$, representing 38% common variance); and
58. Expected Improvements in Legal Compliance and Expected Improvements in School Infrastructure ($r=+0.605$, representing 37% common variance); and
59. Expected Improvements in Legal Compliance and Expected Improvements in School Curriculum ($r=+0.590$, representing 35% common variance); and
60. Expected Improvements in Legal Compliance and Expected Improvements in School Governance ($r=+0.589$, representing 35% common variance); and
61. Expected Improvements in Legal Compliance and Expected Improvements in School Staff Matters ($r=+0.493$, representing 24% common variance); and
62. Expected Improvements in Legal Compliance and Expected Improvements in Numbers of Students ($r=+0.490$, representing 24% common variance); and
63. Expected Improvements in Legal Compliance and Expected Improvements in Student Learning Outcomes ($r=+0.483$, representing 23% common variance); and
64. Expected Improvements in Legal Compliance and Expected Improvements in Disputes and Complaints ($r=+0.445$, representing 20 % common variance); and
65. Expected Improvements in Legal Compliance and Expected Improvements in Instructional Time ($r=+0.425$, representing 18% common variance); and
66. Expected Improvements in Legal Compliance and Expected Improvements in Enrolments & Attendance ($r=+0.372$, representing 14% common variance); and

The highest positive correlation in this group again involved Expected Improvements in Care for Students ($r=+0.659$, representing 43% common variance).

This is consistent with the previous correlations suggesting that, in independent schools where staff supposedly care for students more and where school ethos is often based on religious grounds, there would be expected improvements in school learning outcomes and expected reductions in school disputes and complaints, and that Formal School Registration relating to these criteria would have a causal positive influence on schools and students.

Summary of Main Findings

Using Guttman Scale scores ((Fabrigar & MacGregor, 2007; Guttman, 1950; Guttman, 1944), this chapter examined the inter-relationships between and amongst the twelve criteria of school registration and the School Administrators Beliefs that Expected School Improvements Were Due To Formal School Registration. The Guttman Scale scores were used to calculate the zero-order inter-correlations (Pearson Product-Moment Correlations) between and amongst the twelve Guttman Scale scores. The response pattern in all of the twelve Guttman Scale scores was logical and consistent. The zero-order inter-correlations were positive ranging from low ($r=+0.245$, representing 6% common variance) to a moderately high positive correlation ($r=+0.769$, representing 59% common variance) The main findings are now set out.

1. The twelve Guttman Scale scores have an acceptable step-type arrangement, giving strong evidence of a unidimensional scale for the items of twelve aspects of Expected School Improvements Due to Formal School Registration (see Table 9.1 & Table 9.2).
2. There was agreement between the Guttman Scale scores and the Rasch Measurement Model (see Chapter 7) regarding the order of difficulty for the items related to the Expected School Improvements Due to Formal School Registration.

For example, both measures listed item 13, *the Expected Expertise and Qualifications of the School's Financial Management Staff*, as the hardest School Financial Viability improvement item.

3. There was agreement between the Guttman Scale scores and the analysis (see Chapter 12) regarding the order of difficulty for the items related to the Expected School Improvement Due to Formal School Registration. For example, School Administrator references to school infrastructure, "*Getting the school ready for registration*", suggested that School Improvements in School Infrastructure could be expected due to Formal School Registration should be a relatively easy item with which to agree.
4. Moderately high positive correlations were found between the following twelve criteria of formal school registration;
 - School Governance & School Staff (r=+0.709, 50% common variance)
 - School Governance & Finance Viability (r=+0.769, 59% common variance)
 - Finance Viability & School Infrastructure (r=+0.750, 56% common variance)
 - Finance Viability & Care for Students (r=+0.700, 49% common variance)
 - Care for Students & Learning Outcomes (r=+0.699, 49% common variance)
 - Care for Students & Disputes & Complaints (r=+0.709, 50% common variance)
 - Learning Outcomes & School Curriculum (r=+0.588, 35% common variance)
5. Moderately low positive correlations were found between two of the twelve aspects of formal school registration;
 - Instructional Time & Enrolment/Attendance (r=+0.265, 12% common variance)
 - Instructional Time & School Governance (r=+0.245, 6% common variance).

In the next chapter, the data analysis continues with an examination of the inter-relationships between the twelve criteria of school registration and the School

Administrators' Beliefs that Actual School Improvements Were Due to Formal School Registration against the following Context Variables; School Location, School Type, School Size, School Leader Gender and School Leader Position.

CHAPTER TEN

DATA ANALYSIS (PART 5) – CROSS TABULATIONS OF GUTTMAN SCALES (ACTUAL IMPROVEMENTS) AND THE CONTEXT VARIABLES

In this chapter, the data analysis examines the bivariate relationships between the twelve criteria of School Administrators Beliefs that Actual School Improvements Were Due To Formal School Registration and the following context variables; school location, school type, school size, school administrator gender and school administrator position. It provides an overview of the data and helps to identify variables which may have influenced a school leader's beliefs regarding the relationship between school improvement and the formal school registration process. It complements the previous data analysis (Chapters Six & Eight) which examined the twelve aspects of formal school registration; (1) School Governance; (2) School Financial Viability; (3) Enrolment & Attendance; (4) Number of Students; (5) Instructional Time; (6) School Staff; (7) School Infrastructure; (8) School Curriculum; (9) Student Learning Outcomes; (10) Care for Students; (11) Disputes and Complaints; and (12) Legal Compliance.

Using the twelve Guttman Scales that were created to determine the inter-correlations amongst and between the twelve criteria of School Registration (see Chapter Eight) and the five context variables, eight two-way contingency tables were constructed to examine the possible 60 (12 Criteria x 5 Context Variable) relationships. Although there were nine context variables considered in the original data collection, the following four variables were subsequently disregarded; student gender, school administrator experience, school administrator age, school administrator qualification.

A review of those context variables discovered a lack of any contrasting data. For example, data revealed that there was only one school administrator located at a single student gender school, with the remaining school administrators all located at mixed student gender schools. Similarly, the data concerning the experience, age and qualifications of school administrators lacked any meaningful variation (see Chapter Six). The final cross-tabulation tables were analyzed with the computer program IBM Statistics Program for Social Sciences (IBM SPSS21). These tables, together with the results of a Fisher's Exact Test and the Pearson Chi-Square values, show quickly and easily whether there is any bivariate relationship between the variables.

Due to the small sample size ($N=65$), in which several cross-tabulated cells were less than the required number ($N=5$), it was helpful to review a new cross tabulation for each context variable. This was made possible by creating four new cross-tabulations of the hardest item as determined by a Guttman Scale (see Chapter Eight) and the context variables. These cross-tabulations provided a more definitive picture of whether the beliefs of school administrators were influenced by their contextual circumstances. The chapter begins with an analysis of two by two cross-tabulations of Guttman Scale and Context Variables. Next it examines the cross tabulations of the hardest items and the context variables. The chapter concludes with a summary of the main findings.

Cross-Tabulations: Guttman Scales and Context Variables

In the original data collection, there were four response categories or dependent variables; there was no improvement due to school registration (scored 1); there was some improvement, but it was not due to school registration (scored 2); there was for some improvement due to school registration (scored 3); and there was significant improvement due to school registration (scored 4). These four response categories

were recoded into two dichotomous variables suitable for a two-by-two cross-tabulation. The new categories or dependent variables located in the rows were; no improvement (scored 1), improvement (scored 2). The context or independent variables were also dichotomized for each two-by-two cross tabulation. The simplest and yet useful type of cross-tabulation table contains only two dichotomous variables (Rubin, 2012). What follow are the cross tabulations of the context variable School Location with the dependent variables; School Governance and School Finance.

School Location and School Governance

It is a common assumption that schools located in remote or regional areas are disadvantaged by their location. Generally, schools in remote or regional areas have access to fewer resources and services than schools situated within urban metro centres (Harris, A., James, S., Gunraj, J., & Clarke, P., 2006). The Australian Government's initiative, 'National Plan for School Improvement' highlights this concern for school improvement within remote and regional schools (Garrett, 2012). Some suggest that School Location is a key factor contributing towards the possibility of achieving school improvements (Mills & Gale, 2010). The reduced availability and expertise of School Governance is thought to negatively impact upon schools located away from the more populous metro centres. The impact of School Location on the beliefs of school administrators, that actual school improvements in School Governance were due to the formal school registration process, should be noticeable in school administrator's beliefs regarding the School Governance standards set by the school registration process. However, the data collected in this study does not appear to support this general assumption concerning the relationship between school improvement and the school registration process. The data in Table 10.1 below suggests that school location has had

very little impact on the beliefs of School Administrators that actual school improvements in School Governance were due to formal school registration. The data shows that approximately 78% of School Administrators, regardless of school location, stated that there were no actual improvements in School Governance due to the formal school registration process. There was very little difference (approximately 4%) between the beliefs of School Administrators at metropolitan and regional schools and only 22% of all School Administrators felt that the formal school registration process had led to an actual improvement in school governance.

Table 10.1 Cross-Tabulation of School Location and Criterion 1 (School Governance) of School Registration Causing Actual School Improvement (N=64).

CROSS-TABULATION				

Criteria 1: School Governance	Sch. Location	Metro	Sch. Location Regional	Total

No Improvement	Count:	29	21	50
Per cent within	No Improvement:	58.0%	42.0%	100%
Per cent within	School Location:	76.3%	80.8%	78.1%
Per cent of Total	No Improvement:	45.3%	32.8%	78.1%
Improvement	Count:	9	5	14
Per cent within	Improvement:	64.3%	35.7%	100%
Per cent within	School Location:	23.7%	19.2%	21.9%
Per cent of Total	Improvement:	14.1%	7.8%	21.9%
Total	Count:	38	26	64
Total Per cent	School Location:	59.4%	40.6%	100%

Pearson Chi-Square :	Value = 0.179	df = 1	Asymp. Sig. (2-sided)	= 0.672
Contingency Coefficient:	Value = 0.053		Approx. Sig.	=0.672
Fisher's Exact Test:			Asymp. Sig. (2-sided) =0.765	Exact Sig. =0.459

Note:

1. The percentage of schools represented in Table 10.1 (Metro 59.4%, Regional 40.6%), approximates the 2010 Association of Independent Schools in Western Australia (AISWA) membership registry indicating an approximate Metro 65% and Regional 35% division.
2. In Table 10.1, remote schools were recognized as regional schools in order to ensure the data anonymity of three remote schools.

Table 10.1 shows a Pearson Chi-Square value of 0.179, with df=1 and

Asymptotic Significance 0.672 and a Fisher's Exact Test value of 0.459. This indicates

that there is no significant interaction between the beliefs of school administrators that actual improvements in School Governance were due to the school registration process and the location of the school. The Contingency Coefficient value of 0.053 and the Approximate Significance $r=+0.672$ suggest no relationship between beliefs relating to school governance and school location.

School Location and School Finance

Closely linked to the assumptions regarding the disadvantaged position of remote or regional schools is the element of School Finance. It is generally assumed that the lower per capita income levels present within remote or regional communities negatively impacts School Finance (Garrett, 2012). Consequently, it is expected that school administrators in remote or regional schools might experience a heightened relationship between school improvement and school registration. Brought on by the school finance standards of the school registration process, the impact of school location should therefore also be noticeable on the beliefs of school administrators that actual school improvements in School Finance were due to the formal school registration process. It is interesting to note that school administrators who were interviewed in this study also stated that this criterion (School Financial Viability) was an essential standard of the formal school registration process (see Chapter Eleven).

The data in Table 10.2 appears to question the assumptions regarding the impact of school location on school finance in terms of the beliefs of school administrators that actual school improvement in School Finance were due to the formal school registration process. Most school administrators 87.5% stated that there were no actual school improvements in School Finance due to the formal school registration process. The difference between the beliefs of metropolitan and regional school administrators is less

than 2% and only 12.5% of all school administrators believed that school registration caused an improvement in School Finances. It is expected that school administrators who manage non-government schools, which are partially funding by parents through tuition fees, might be confident about standards linked to School Finances.

Table 10.2 Cross-tabulation of School Location and Criterion 2 (School Finance) of School Registration Causing Actual School Improvement (N=64).

CROSS-TABULATION				
Criteria 2: School Finance		Sch. Location Metro	Sch. Location Regional	Total
No Improvement	Count:	39	23	56
Per cent within	No Improvement:	58.9%	41.0%	100%
Per cent within	School Location:	86.8%	88.5%	87.5%
Per cent of Total	No Improvement:	51.6%	35.9%	85.5%
Improvement	Count:	5	3	8
Per cent within	Improvement:	62.5%	37.5%	100%
Per cent within	School Location:	13.2%	11.5%	12.5%
Per cent of Total	Improvement:	7.8%	4.7%	12.5%
Total	Count:	38	26	64
Total Per cent	School Location:	59.4%	40.6%	100%
Pearson Chi-Square:	Value = 0.037	df = 1	Asymptotic Significance (2-sided)	= 0.847
Contingency Coefficient:	Value = 0.024		Approx. Sig.	=0.847
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=1.000 Exact Sig. =0.583

Note:

1. In Table 10.2 remote schools were recognized as regional schools in order to ensure the data anonymity of three remote schools.

Table 10.2 shows a Pearson Chi-Square value of 0.037, with df=1 and Asymptotic Significance 0.847 and a Fisher's Exact Test value of 0.583. This indicates that there is no significant interaction between the beliefs of school administrators that actual improvements in School Governance were due to the school registration process and the location of the school. The Contingency Coefficient value of 0.024, Approximate Significance $r=+0.847$ is highly positive, suggesting a commonality of responses, rather than a direct causal effect between these variables. These results were

repeated in similar two by two cross-tabulations between School Location and the other remaining independent variables.

School Size and School Staff

It has already been indicated in this study that the beliefs of School Administrators at larger schools differed from the beliefs of School Administrators at smaller schools. The data analysis in Chapter Six showed that school administrators at larger schools had significantly lower levels of beliefs that school improvements were due to formal school registration than did their colleagues located at smaller schools (see Figure 6.4). This was expected, since School Administrators at larger schools have greater access to staffing and the resources needed to satisfy the requirements linked to the criteria standards of formal school registration. Although not statistically significant, the data in Table 10.3 does appear to agree with the previous data analysis by pointing to a difference in beliefs between School Administrators at larger and smaller schools. Approximately 19.6% of the School Administrators at smaller schools held the belief that school improvements regarding school staff were linked to the formal school registration process, while only 5.9% of School Administrators at larger schools shared that opinion. Although the majority 84.1% of School Administrators opinionated that no school staff improvements were resultant from the school registration process, the approximate 13.7% difference between the two groups does suggest that school size did influence the beliefs of School Administrators. Table 10.3 shows a Pearson Chi-Square value of 1.740, with $df=1$ and Asymptotic Significance 0.187 and a Fisher's Exact Test value of 0.178. This indicates no statistical significance concerning school size and the beliefs of School Administrators that actual improvements in School Staff were due to the school registration process. This is

supported by the Contingency Coefficient value of 0.164 and the Approximate Significance $r=+0.187$ which are low.

Table 10.3 Cross-Tabulation of School Size and Criterion 6 (School Staff) of School Registration Causing Actual School Improvement (N=63).

CROSS-TABULATION				
Criteria 6: School Staff		Smaller Schools	Larger Schools	Total
No Improvement	Count:	37	16	53
Per cent within	No Improvement:	69.8%	30.2%	100%
Per cent within	School Size:	80.4%	94.1%	84.1%
Per cent of Total	No Improvement:	58.7%	25.4%	84.1%
Improvement	Count:	9	1	10
Per cent within	Improvement:	90.0%	10.0%	100%
Per cent within	School Size:	19.6%	5.9%	15.9%
Per cent of Total	Improvement:	14.3%	1.6%	15.9%
Total	Count:	46	17	63
Total Per cent	School Size:	73.0%	27.0%	100%
Pearson Chi-Square:	Value = 1.740	df = 1	Asymp. Sig. (2-sided)	= 0.187
Contingency Coefficient:	Value = 0.164		Approx. Sig.	=0.187
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.263
			Exact Sig.	=0.178

Note:

1. Smaller Schools have less than 500 hundred students; Larger Schools have more than 500 students.

School Size and Legal Compliance

Further analysis of the data regarding the relationship between the context variables and the Aspects of schools registration reveals that most School Administrators hold similar beliefs regarding Criterion 12; Legal Compliance. As noticed previously, (see Chapters Six & Seven), the school improvement items linked to Legal Compliance were legislative requirements imposed on all School Administrators. The data in Table 10.4 suggests that School Administrators do agree, with a less than 1% difference (50.8% to 49.2%), in their attitudes regarding actual school improvements in Legal Compliance that were due to the formal school registration

process. Fisher's Exact Test value of 0.469 and the Contingency Coefficient value of 0.045 supports the statistical insignificance of the relationship between legal compliance and school size.

Table 10.4 Cross-tabulation of School Size and Criterion 12 (Legal Compliance) of School Registration Causing Actual School Improvement (N=63).

CROSS-TABULATION				
Criteria 12: Legal Compliance		Smaller Schools	Larger Schools	Total
No Improvement	Count:	24	8	32
Per cent within	No Improvement:	75.0%	25.0%	100%
Per cent within	School Size:	52.2%	47.1%	50.8%
Per cent of Total	No Improvement:	38.1%	12.7%	50.8%
Improvement	Count:	22	9	31
Per cent within	Improvement:	71.0%	29.0%	100%
Per cent within	School Size:	47.8%	52.9%	49.2%
Per cent of Total	Improvement:	34.9%	14.3%	49.2%
Total	Count:	46	17	63
Total Per cent	School Size:	73.0%	27.0%	100%
Pearson Chi-Square:	Value = 0.130	df = 1	Asymp. Sig. (2-sided)	= 0.718
Contingency Coefficient:	Value = 0.045		Approx. Sig.	=0.718
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.782
			Exact Sig.	=0.469

Note:

1. Smaller Schools have less than 500 hundred students; Larger Schools have more than 500 students.

School Type and Student Learning Outcomes

Although it is difficult to define precisely a school type, since there are many different types of non-government schools in Western Australia (see Chapter Three), the data analysis examined the influence of two school types on the beliefs of School Administrators that actual school improvement in Student Learning Outcomes were due to the formal school registration process. The two types of schools identified were; (1) non-K-12 schools that did not offer a complete K-12 learning program, such as primary schools and (2) K-12 schools that did offer the complete learning program. Generally,

the K-12 schools in this study were larger and more likely to be located within a metropolitan region. Ascribed to the K-12 schools are such benefits as greater program efficiency and enhanced student learning outcomes (DeJong & Craig, 2002). The data analysis considered whether school type might influence the beliefs of School Administrators.

The data in Table 10.5 below shows that a very high percentage (94.7%) of all School Administrators believe that no actual school improvements in student learning outcomes were due to the formal school registration process. There is a very small difference of approximately 1% between the stated beliefs of non-K-12 and K-12 School Administrators.

Table 10.5 Cross-Tabulation of School Type and Criterion 9 (Student Learning Outcomes) of School Registration Causing Actual School Improvement (N=57).

CROSS-TABULATION				
Criteria 9: Learning Outcomes		Non K-12 Schools	K-12 Schools	Total
No Improvement	Count:	21	33	54
Per cent within	No Improvement:	38.9%	61.1%	100%
Per cent within	School Type:	95.5%	94.3%	94.7%
Per cent of Total	No Improvement:	36.8%	57.9%	94.7%
Improvement	Count:	1	2	3
Per cent within	Improvement:	33.3%	66.7%	100%
Per cent within	School Type:	4.5%	5.7%	5.3%
Per cent of Total	Improvement:	1.8%	3.5%	5.3%
Total	Count:	22	35	57
Total Per cent	School Type:	38.6%	61.4%	100%
Pearson Chi-Square:	Value = 0.037	df = 1	Asymp. Sig. (2-sided)	= 0.847
Contingency Coefficient:	Value = 0.025		Approx. Sig.	=0.847
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=1.000
			Exact Sig.	=0.671

Only 5.3% of School Administrators felt that school registration had led to some improvement of student learning outcomes. The data agrees with the earlier findings (Chapter Six & Seven) and is expected since student learning outcomes is part of the

raison d'être for these schools. The Fisher Exact Test value of 0.671 is statistically insignificant and the Contingency Coefficient value of 0.025 indicating no relationship between beliefs on Student Learning Outcomes and School Type.

School Type and Disputes & Complaints

It is at times suggested that smaller type schools, such as K-6 Primary schools, enjoy benefits which larger K-12 schools struggle to realize. Small school advocates point to fewer disputes and complaints as one such benefit (Pardini, 2002). Hence it is anticipated that School Type may affect the beliefs of School Administrators that actual school improvements in disputes and complaints were due to the formal school registration process.

Table 10.6 Cross-Tabulation of School Type and Criteria 11 (Disputes & Complaints) of School Registration Causing Actual School Improvement (N=57).

CROSS-TABULATION				
Criteria 11: Disputes & Complaints		Non K-12 Schools	K-12 Schools	Total
No Improvement	Count:	20	32	52
Per cent within	No Improvement:	38.5%	61.5%	100%
Per cent within	School Type:	90.9%	91.4%	91.2%
Per cent of Total	No Improvement:	35.1%	56.1%	91.2%
Improvement	Count:	2	3	5
Per cent within	Improvement:	40.0%	60.0%	100%
Per cent within	School Type:	9.1%	8.6%	8.8%
Per cent of Total	Improvement:	3.5%	5.3%	8.8%
Total	Count:	22	35	57
Total Per cent	School Type:	38.6%	61.4%	100%

Pearson Chi-Square:	Value = 0.005	df = 1	Asymptotic Significance (2-sided)	= 0.946
Contingency Coefficient:	Value = 0.009		Approximate Significance	=0.946
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=1.000
			Exact Sig.	=0.647

Although an important standard within the school registration process, as emphasized by a direct reference from Section 118 of the School Education Act of 1999 in Western Australia (Department of Education Services, 2001), Table 10.6 shows that School Type has had little impact upon the beliefs of School Administrators. The Fisher Exact Test indicates a value of 0.647 which is not statistically significant and the Contingency Coefficient is 0.009 suggesting no relationship between School Administrator beliefs on Disputes & Complaints and School Type.

Gender of School Administrator and Care for Students

The analysis of the relationship between the independent variable, Gender of School Administrators and the dependent variable Care for Students, is prompted by two factors. First, the on-going research into gender differences suggests the importance of this element in matters related to school improvement (King, Gurian, & Stevens, 2010). Second, listed as the tenth criterion for formal school registration, the Care for Students is an essential standard set by the formal school registration process. A question arises regarding the influence of the School Administrator's gender on his or her beliefs that school improvement in Care for Students were due to the school registration process; Is there a noticeable difference between the beliefs of female and male School Administrators?

In Table 10.7, the data shows an approximate 60% to 40% split between male and female School Administrators. It indicates that almost 90% of School Administrators stated that they believed that there were no actual school improvements in the Care for Students caused by the formal school registration process. There is a minor difference of approximately 8.5% between the opinions of male and female School Administrators. Female School Administrators were more inclined to agree that

actual school improvement had occurred as a result of the formal school registration process. Table 10.7 shows a Pearson Chi-Square value of 1.157, with df=1 and Asymptotic Significance 0.282 and a Fisher's Exact Test value of 0.250. This indicates no statistical significance concerning School Administrator gender and the beliefs of School Administrators that actual school improvements in the Care for Students were due to the formal school registration.

Table 10.7 Cross-Tabulation of School Administrator Gender and Criteria 10: (Care for Students) of School Registration Causing Actual School Improvement (N=65).

CROSS-TABULATION				
Criteria 10: Care for Students:		Male	Female	Total
No Improvement	Count:	37	21	58
Per cent within	No Improvement:	63.8%	36.2%	100%
Per cent within	Administrator Gender:	92.5%	84.0%	89.2%
Per cent of Total	No Improvement:	56.9%	32.3%	89.2%
Improvement	Count:	3	4	7
Per cent within	Improvement:	42.9%	57.1%	100%
Per cent within	Administrator Gender:	7.5%	16.0%	10.8%
Per cent of Total	Improvement:	4.6%	6.2%	10.8%
Total	Count:	40	25	65
Total	Per cent Administrator Gender:	61.5%	38.5%	100%

Pearson Chi-Square:	Value = 1.157	df = 1	Asymptotic Significance (2-sided)	= 0.282
Contingency Coefficient:	Value = 0.132		Approximate Significance	=0.282
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.415
			Exact Sig.	=0.250

School Position and School Curriculum

In examining the relationship between these two variables, the differing roles of the School Council Chair and School Principal is stressed. The signatories on the School Registration Application Form (see Chapter One); it is the School Council Chair and School Principal who ensure that the school has met the standards of this key criteria set within the school registration process. Yet, the function of school

governance, as completed by the School Council Chair, differs from that of the School Principal, who manages the school's daily operations. Without suggesting a causal relationship, the data in Table 10.8 shows no noticeable difference between the stated beliefs of School Council Chairs and School Principals. Approximately 60% of all School Administrators felt that no improvement had arisen as a result of the school registration process. While statistically insignificant with a Fisher's Exact Test value of 0.852, the low Contingency Coefficient value of 0.025 supports no relationship between the variables.

Table 10.8 Cross-tabulation of School Position and Criteria 8: School Curriculum of School Registration Causing Actual School Improvement (N=57).

CROSS-TABULATION				
Criteria 8: School Curriculum		School Council	School Management	Total
No Improvement	Count:	11	23	34
Per cent within	No Improvement:	32.4%	67.6%	100%
Per cent within	School Position:	57.9%	60.5%	59.6%
Per cent of Total	No Improvement:	19.3%	40.4%	59.6%
Improvement	Count:	8	15	23
Per cent within	Improvement:	34.8%	65.2%	100%
Per cent within	School Position:	42.1 %	39.5%	40.4%
Per cent of Total	Improvement:	14.0%	26.3%	40.4%
Total	Count:	19	38	57
Total Per cent	School Position:	33.3%	66.7%	100%
Pearson Chi-Square:	Value = 0.036	df = 1	Asymptotic Significance (2-sided)	= 0.849
Contingency Coefficient:	Value = 0.025		Approximate Significance	=0.849
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.133
			Exact Sig.	=0.852

Note:

1. In Table 10.8, School Council denotes current members serving as School Council Chairs. School Management denotes School Principals who manage the school's daily operations.

Cross-Tabulations of Guttman Scales: Hardest Item to Improve & Context

Variables

In the study questionnaire there were five items of actual school improvements related to standards set for each criteria that is used in the formal school registration process. The five items of actual school improvements were initially numbered and placed into twelve separate questionnaire sections. Using a Guttman Scale measurement of the beliefs expressed by School Administrators, the items of actual school improvements were then ranked from easiest to improve, to items that were considered to be the hardest to improve (see Chapter Eight). What follows is a review of the bivariate relationships between the beliefs of School Administrators concerning the hardest items of actual school improvements and the independent variables previously described in this chapter. The data is displayed in Tables 10.9 to 10.12.

School Location and Item 6: The School Council's community and public relations.

Selected from the items that were listed as school improvements in School Governance, School Administrators judged Item 6 as the hardest item to improve; The School Council's community and public relations. The data in Table 10.9 shows that 57.8% of School Administrators, regardless of their school location, were of the opinion that no school improvements in the School Council's community and public relations were due to the formal school registration process. This data, which is similar to the information presented in Table 10.1, confirms a possible suggestion that school public image is significant in non-government schools that are dependent on external sources of funding. There was a 6.2% difference between the expressed opinion of School Administrators at metro and regional schools. A Pearson Chi-Square value of 0.249,

with $df=1$ and Asymptotic Significance 0.618 and a Fisher's Exact Test value of 0.406 is statistically insignificant. The Contingency Coefficient value of 0.062, and the Approximate Significance of +0.624 supports the insignificant relationship.

Table 10.9 Cross-Tabulation of School Location and Item 6: The School Council's community and public relations. (N=64).

CROSS-TABULATION				
Item 6: Sch. Council's Community & Public Relations.		Metro	Regional	Total
No Improvement	Count:	21	26	37
Per cent within	No Improvement:	58.8%	43.2%	100%
Per cent within	School Location:	55.3%	61.5%	57.8%
Per cent of Total	No Improvement:	32.8%	25.0%	57.8%
Improvement	Count:	17	10	27
Per cent within	Improvement:	63.0%	37.0%	100%
Per cent within	School Location:	44.7%	38.5%	42.2%
Per cent of Total	Improvement:	26.6%	15.6%	42.2%
Total	Count:	38	26	64
Total Per cent	School Location:	59.4%	40.6%	100%

Pearson Chi-Square :	Value = 0.249	df = 1	Asymptotic Significance (2-sided)	= 0.618
Contingency Coefficient:	Value = 0.062		Approximate Significance	=0.618
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.797
			Exact Sig.	=0.406

Note: 1. The percentage of schools represented in Table 10.9 (Metro 59.4%, Regional 40.6%), approximates the 2010 Association of Independent Schools in Western Australia (AISWA) membership registry indicating an approximate Metro 65% and Regional 35% division.

School Type and Item 58: The Morale and Professionalism of Staff at School

School Administrators expressed the belief that Item 58: The Morale and Professionalism of Staff was the hardest school improvement item to improve within the Sixth criterion of formal school registration. The data in Table 10.10 shows that 53.1% of School Administrators felt that no improvement in staff morale and professionalism had occurred due to the formal school registration process. There is an approximate 15.2% difference between the expressed beliefs of School Administrators

at non-K-12 and those at K-12 schools. School Administrators at non-K-12 school were more likely to state that school registration had caused staff morale and professionalism to improve. Without suggesting a causal relationship, the difference in the beliefs of non-K-12 and K-12 School Administrators appears to confirm a previous observation concerning the influence of School Location and School Size (see Chapter 6). School Administrators at smaller regional schools tended to find the items of school improvement more difficult than their counter parts at larger metropolitan schools.

Table 10.10 shows a Pearson Chi-Square value of 1.466, with df=1 and Asymptotic Significance 0.226 and a Fisher's Exact Test value of 0.169. This indicates no statistical significance concerning School Type and the beliefs of School Administrators that actual school improvements in Staff Morale and Professionalism were due to the school registration process. The Contingency Coefficient value of 0.150 and the Approximate Significance of +0.226 supports this.

Table 10.10 Cross-Tabulation of School Type and Item 58: Improvement in Morale and Professionalism of Staff at School. (N=64).

CROSS-TABULATION				
Item 58: Staff Morale & Professionalism		Non K-12 Schools	K-12 Schools	Total
No Improvement	Count:	13	21	34
Per cent within	No Improvement:	38.2%	61.8%	100%
Per cent within	School Type:	44.8%	60.0%	53.1%
Per cent of Total	No Improvement:	20.3%	32.8%	53.1%
Improvement	Count:	16	14	30
Per cent within	Improvement:	53.3%	46.7%	100%
Per cent within	School Type:	55.2%	40.0%	46.9%
Per cent of Total	Improvement:	25.0%	21.9%	46.9%
Total	Count:	29	35	64
Total Per cent	School Type:	45.3%	54.7%	100%
Pearson Chi-Square:	Value = 1.466	df = 1	Asymptotic Significance (2-sided)	= 0.226
Contingency Coefficient:	Value = 0.150		Approximate Significance	=0.226
Fisher's Exact Test:			Asymp. Sig. (2-sided) =.315	Exact Sig. =0.169

School Size and Item 114: Staff training on matters dealing with legal requirements.

The analysis of data regarding the relationship between School Size and Item 114: Staff training on matters dealing with legal requirements (Legal Compliance) indicates a statistically significant result with a Fisher's Exact Test value of 0.009 and a Contingency Coefficient value of 0.318 with Approximate Significance of +0.008. indicating that there is a low relationship between beliefs on Staff Training and School Size. Smaller schools have more positive beliefs that improvements will result.

Table 10.11 Cross-Tabulation of School Size and Item 114: Staff training on matters dealing with legal requirements (N=62).

CROSS-TABULATION				
Item 114: Staff training on legal matters		Smaller Schools	Larger Schools	Total
No Improvement	Count:	15	12	27
Per cent within	No Improvement:	55.6%	44.4%	100%
Per cent within	School Size:	33.3%	70.6%	43.5%
Per cent of Total	No Improvement:	24.2%	19.4%	43.5%
Improvement	Count:	30	5	35
Per cent within	Improvement:	85.7%	14.3%	100%
Per cent within	School Size:	66.7%	29.4%	56.5%
Per cent of Total	Improvement:	48.4%	8.1%	56.5%
Total	Count:	45	17	62
Total Per cent	School Size:	72.6%	27.4%	100%
Pearson Chi-Square:	Value = 6.966	df = 1	Asymptotic Significance (2-sided)	= 0.008
Contingency Coefficient:	Value = 0.318		Approximate Significance	=0.008
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.011
			Exact Sig.	=0.009

Note:

1. Smaller Schools have less than 500 hundred students; Larger Schools have more than 500 students.

The data in Table 10.11(see above) shows that there was an approximate 27.3% difference in the expressed beliefs of the School Administrators at larger and smaller schools. School Administrators at smaller schools were more likely to state that the

formal school registration process had caused a school improvement regarding staff training on matters dealing with legal requirements. Although unable to put forward an explanation of this relationship between School Size and Item 144: Staff training on matters dealing with legal requirements, the data analysis supports several observations previously considered in this study (see Chapter Six and Table 10.3) and comments made by School Administrators (see Chapter Eleven).

School Administrator Gender and Item 100: The school's pastoral care program

As indicated previously in Table 10.7, further analysis of data confirms that the gender of School Administrators does not appear to influence their Care for Students regarding the relationship between School Administrator Gender and Item 100: The school's pastoral care program. Table 10.12 shows no statistical significance with a Pearson Chi-Square value of 1.642, with df=1 and Asymptotic Significance 0.200 and a Fisher's Exact Test value of 0.153.

Table 10.12 Cross-Tabulation of School Administrator Gender and Item: 100 The school's pastoral care program (N=64).

CROSS-TABULATION				
Item 100: School's pastoral care program:		Male	Female	Total
No Improvement	Count:	22	10	32
Per cent within	No Improvement:	68.8%	31.3%	100%
Per cent within	Administrator Gender:	56.4%	40.0%	50.0%
Per cent of Total	No Improvement:	34.4%	15.6%	50.0%
Improvement	Count:	17	15	32
Per cent within	Improvement:	53.1%	46.9%	100%
Per cent within	Administrator Gender:	43.6%	60.0%	50.0%
Per cent of Total	Improvement:	26.6%	23.4%	50.0%
Total	Count:	39	25	64
Total	Per cent Administrator Gender:	60.9%	39.1%	100%

Pearson Chi-Square:	Value = 1.642	df = 1	Asymptotic Significance (2-sided)	= 0.200
Contingency Coefficient:	Value = 0.158		Approximate Significance	=0.200
Fisher's Exact Test:			Asymp. Sig. (2-sided)	=0.305
			Exact Sig.	=0.153

Summary of Main Findings

This chapter examined the bivariate relationship between the twelve criteria of School Administrators Beliefs that Actual School Improvements Were Due to Formal School Registration and the following context variables; School Location, School Type, School Size, School Administrator Gender and School Administrator Position. It provided an overview of the data and identified variables which have influenced a School Administrator's beliefs regarding the relationship between school improvement and the formal school registration process. Generally, the results of this data analysis confirmed the previous findings presented in Chapters Six and Eight.

Using twelve Guttman Scales that were first created to determine the inter-correlations amongst and between the twelve criteria of School Registration and the five context variables, eight two-way contingency tables (Tables 10.1 to 10.8) were constructed. These tables were analyzed with the IBM Statistics Program for Social Science (IBM SPSS21) computer program. The tables, together with the results of a Fisher's Exact Test and the Pearson Chi-Square values, show that School Administrator's beliefs were quite uniform and seldom influenced by the contextual variables.

An additional four cross tabulations were created to examine the relationship between the hardest items to improve, as determined by a Guttman Scale measurement (see Chapter Seven) and the context variables. The independent and dependent variables were dichotomized for each two-by-two cross-tabulation. These cross-tabulations provided a more definitive picture regarding the beliefs of School Administrators.

The main findings are summarized.

1. School Location & School Governance: There was no statistical significance regarding the relationship between School Location and School Governance. School Administrators (78%) tended to agree that no improvements were due to the formal school registration process. A very small difference of approximately 4% separated the expressed beliefs of metropolitan and regional School Administrators.
2. School Location and School Finance: Most School Administrators (87.5%) stated that there were no actual school improvements in School Finance due to the formal school registration process by school location. The difference between the beliefs of metropolitan and regional School Administrators was less than 2%.
3. School Size and School Staff: Approximately 19.6% of School Administrators at smaller schools held the belief that school improvements regarding school staff were linked to the formal school registration process, while only 5.9% of School Administrators at larger schools shared that opinion. The majority of school administrators (84%) believed that no improvements had occurred due to the formal school registration process.
4. School Size and Legal Compliance: There was no statistical significance regarding the relationship between school size and legal compliance. There was a less than 1% difference in the expressed beliefs of School Administrators at larger or small schools. Almost 50% of all School Administrators felt that school registration had contributed to school improvements in legal compliance.
5. School Type and Student Learning Outcomes: A very high percentage of all School Administrators (94.7%) believed that no actual school improvements in student learning

outcomes were due to the formal school registration process. There was an approximate 1% difference between the stated beliefs of non-K-12 and K-12 School Administrators.

6. School Type and Disputes & Complaints: Most School Administrators (91.2%) felt that no school improvements regarding Disputes & Complaints were due to the formal school registration process by school type. Suggesting no causative relationship, strong beliefs were expressed by School Administrators.

7. Gender of School Administrator and Care for Students: There was no statistical significance evident in the relationship between School Administrator gender and Care for School. Almost 90% of all School Administrators stated that no school improvements were due to the formal school process.

8. School Position and School Curriculum: School Council Chairs (57.9%) and School Principals (60.5%) tended to agree on their beliefs that there were no school improvements due to the formal school registration process and there was no statistical difference by school position.

9. The data analysis of an additional four two-by-two tables (see Tables 10.9 to 10.12) provided a definitive picture of the beliefs of School Administrators as influenced by their contextual circumstances. Without suggesting a causal relationship between these variables, as also previously noticed, the beliefs of School Administrators appear to be influenced by school size. Smaller schools tend to believe that school improvement occurs as a result of the formal school registration process.

What follows in the next chapter is a data analysis that examines the comments by school administrators regarding the twelve aspects of the formal school registration process.

CHAPTER ELEVEN

DATA ANALYSIS (PART 6)

SCHOOL ADMINISTRATOR INTERVIEWS

This chapter presents the data analysis and discussion from semi-structured interviews with School Administrators regarding school improvement and the formal school registration process. It focuses specifically on the analysis of the expressed thoughts and opinions made by School Administrators regarding the school registration process. This data informs a response to the seventh research question: what attitudes do School Administrators have regarding school improvement and formal school registration that are not addressed by the twelve formal school registration criteria?

School Administrators were invited to describe their school's registration experience, to talk about how the school registration process might be improved and to share their thoughts regarding the criteria that are used within the formal school registration process. Although the interview discussions were guided, the School Administrators were encouraged to speak about any aspect related to the study.

The analysis of the collected data was guided by the Miles and Huberman framework for data analysis (Miles & Huberman, 1994). With the approval of each participant, an audio recording of the interview was transcribed and later imported into the Nvivo 10 computer program for further analysis (QSR International, 2012). To ensure the concealment of the participants, each transcript is referenced by a letter for the participant, a number for the transcription page, a Roman numeral for the referenced paragraph. For example, a comment made by participant E that appears on the first page and third paragraph of the transcript is coded as E.1.iii.

Issues emerging from this data identified a diverse range of opinions held by School Administrators. Comments made by School Administrators, both the positive as well as negative, highlight the complexity of the issues surrounding the formal school registration process. The seven themes which emerged from the data suggest the need for the on-going development and refinement of the formal school registration process.

Factors Affecting School Registration

Personal Circumstances

Although as previously pointed out in Chapter Two, the formal school registration process is a highly structured and uniform procedure that ignores the personal circumstances of School Administrators, the analysed qualitative data indicated that formal school registration is affected by the School Administrator's personal circumstances. In their description of the school registration process, each of the School Administrators highlighted a personal circumstance that had influenced the school registration process. For example, four School Administrators described their personal situation and how an inability to access resources and support had affected their school registration experience. When asked to explain this, one School Administrator described how the preparation of documents required for the school registration process had been affected by a personal situation.

During re-registration in 2009 I'd only been in this job six months and I found it very difficult, because there was not a lot of stuff to tap into for resources or support. The teachers were very busy and we were understaffed at that point in time and so there weren't a lot of documents. I had to do a lot of cut and paste and making up things and it was very much (sic). (E.1.v)

In addition to the personal circumstances of the School Administrator, the data revealed that the school setting of a School Administrator affected the school

registration process. An issue raised by the School Administrators was how the culture of their school had clashed with the school registration process. In particular, three School Administrators at regional or remote schools showed that their school culture significantly affected the school registration process. Evidence of this situation was underlined by a School Administrator at a remote school who gave the following description of what happened when the school Registration Officer arrived to inspect the school.

... he had no clue about indigenous education. So and like, even the day he came (sic), it was first term, it was the very last day of the term and this poor man had long pants. And you know, well dressed, but it was so hot. I was worried he was going to die. It was so hot (K, 2, ii).

He just had no clue about any of the challenges of remote indigenous schools, so you sort of go, if you're going to come, you sort of need to have some idea of your context (sic). For us, our context is a really big part of our school. (K,2,iii)

The analysis of the data revealed that half of the School Administrators believe that their school's distinctive educational philosophy impacted upon the school registration process. They noted that the school registration process' one-size-fits-all format failed to recognise the distinctive character of non-traditional schools. School Administrators located at Steiner and Montessori schools shared that the school registration process took no notice of a key element within their educational philosophy. By way of explanation, Steiner School Administrators highlighted that the concept of play, which is essential in Steiner Education, is poorly acknowledged by the school registration process. One Steiner School administrator described this in the following manner.

We're very proud to be a member of Steiner Education Australia. Because they are on the cutting edge, and they're offering the main lesson on how we teach our children here. And the main lesson is extremely successful and has had a great outcome on the advancement of education. Because, it's about schooling which involves the head, hands and heart and these are actually terms that are being used by the national curriculum. ...The main component that I always tell

parents just for a quick snapshot of Waldorf education, is, work is play. Those recommendations about NAPLAN and how to teach, I've got to ignore. The real ethos is built around the imaginative play of 0 to 7. If we do it together we're learning together and that's the main basis. When the panel tells us to promote NAPLAN, we know they don't understand Steiner schools. They forget that we are parent driven, that we advise ACARA on curriculum and we will not teach to the test. (E.5.iii)

When schools have an alternative education philosophy, the data revealed that the formal school registration process is significantly affected. Similarly in schools where there is an alternative mode of operation, the formal school registration process struggled to adjust. Non-traditional schools simply did not fit into the accepted expectations of formal school registration. The story given by one School Administrator located at a non-traditional school illustrates clearly how the school registration process failed. What follows is the story of this situation as provided by the School Administrator of a non-traditional school.

When we first came up with the Special School (pseudonym) idea, because it wasn't a traditional school; since most traditional schools have one location and all their buildings in that one location; What we were proposing was a multi-sited school. That was a term we invented. Our school was going to have classrooms in many locations where there were highly disruptive kids. This meant that we had to convince the registration panel, which reviews the licence application, that we knew what we were talking about and that their rules didn't fit our situation. (A.1.i)

Because they only register a school to a site, and they don't register a school which has multi-sites, they had to adjust their rules. It wasn't the issue of the standards and it wasn't the issue of whether we had a proper Board. And, there wasn't an issue about whether we had policy and procedures or people who couldn't manage the school, because the people who were asking for the licence were well credentialed and educated. (A.1.ii)

So, back then there wasn't a market need for this type of care school. It was all new. It took a whole year, outside the normal process, before people even got their minds around the concept. (A.1.iii)

So, we had to not just address the standards, we had argue for the reason for the school and why we needed them and all that sort of stuff. Eventually they came to give us a licence, but they didn't expect us to succeed. So they said, "When you've got two sites going come back and talk to us again."

It was just interesting that our greatest difficulty was that it was on nobody's radar. Nobody understood what we meant, and there were no models for it. We had great difficulty convincing the registration panel to give us a licence. Now when someone rings up the Education Department and says that they want a place for a disruptive kid, they'll say, "Have you tried the Special School (pseudonym)." (A.1.iv)

The data revealed that the personal circumstances and school situation of a school administrator affects the formal school registration process. In situations where school administrator lack resources and support, where there is a unique school culture or an alternative educational philosophy and non-traditional school practices the formal school registration process needed to adept accordingly.

School Improvements Derived from School Registration

Although the aim of the formal school registration process is the renewal of a school's registration period, the data indicate that there were particular school improvements derived from school registration (see also Chapters Six and Seven). All of the School Administrators described how the formal school registration process had resulted in at least one or more school improvement. One school administrator stated that there was a direct link between the formal school registration process and school improvement.

Personally I found it a really positive experience. The apprehension disappeared; we didn't hide anything and we just showed what we were doing. It's about school improvement. It's not about school assessment. (I.1.iv)

The analysis of the data showed that the formal school registration process created a sense of pride and achievement in minds of the school administrators. That positive sense of pride and achievement was evident in the enthusiasm of the School Administrators while they talked about their school registration experience. With ease they described various school improvements derived through their formal school

registration process. While recalling their excited facial expressions and upbeat body language present during the interviews, the following words captures some of that pride and sense of achievement that was experienced by the School Administrators.

I actually enjoyed it, I found it to be quite interesting; just going through the stuff and going yes; yes we're right with that, yes we've got that (sic). It probably gave us an opportunity to tighten a few things up, some of our, say like (sic), the processes for some of that occupational health and safety stuff; just checking on it, which is probably a good kick in the bum sometimes.
(K.4.vi)

Closely tied to a sense of pride and achievement, the data also showed that the formal school registration process generated a sense of confidence and optimism in the School Administrators. Having successfully completed the school registration process, eight School Administrators stated that they were more optimistic and confident in their abilities. In expressing confidence, one School Administrator stated the following.

Yes, yes. I'd happily go through it again knowing what I know now. (L.3.iii)

School Administrators indicated that staff unity and cohesion were strengthened by a collective staff approach in dealing with the external review demands that were imposed on the school by the formal school registration process. While this school improvement was not evident in smaller schools, where the School Administrator was normally the sole person who addressed the requirements of the formal school registration process, four School Administrators in larger schools pointed out that by sharing the school registration tasks, staff unity and cohesion were strengthened. Evidence of this school improvement as expressed by one School Administrator was made clear in the following words.

School registration was a very rewarding experience, because we chose to handle it in-house. I mean, I am aware that some schools outsource the policy work. We didn't elect to do that. (H.1.i)

While the importance of accountability in relation to the securing school improvements was implicitly stated, School Administrators unanimously affirmed that one school improvement linked to the formal school registration process was an increased sense of accountability. School Administrators explained that the sense of accountability was heightened by the objectivity of an external review process. Knowing that their work would be evaluated through the school registration process had caused them to take greater responsibility for the school's operations. The following words from a School Administrator describe the importance of accountability in regards to school improvement.

What the registration process does is (sic), it gives us another set of priorities.(sic) That way an outside body is keeping us accountable for some of those things that are not necessarily what we have as the highest priority. So it does link itself to school improvement. And, it forces us to look at things that are lower down the list of our priorities, but obviously are important. (C.1.ii)

The data revealed that School Administrators noticed that the formal school registration process had contributed to school improvements. These school improvements include the following: (1) School Administrators who feel an increased sense of accountability, pride and confidence, and (2) a stronger sense of staff cohesion and unity.

Improvements to the Formal School Registration Process

School Administrators were eager to suggest how the formal school registration process might be improved. Four School Administrators mentioned that it was the first time that anyone had asked them to talk about their school registration experience and how that experience might be improved. Four aspects of school registration were identified as areas wherein the formal school registration process could be improved,

namely: feedback, registration officers, registration criteria and an internal review option.

Feedback

As explained previously in Chapter Two, the school registration process commences with the submission of a school registration application and related school documents that are then reviewed by the registration panel during a desktop audit. Once the application has been submitted, the School Administrator receives no feedback from the registration panel until the inspectorial visit to the school. This delay in feedback prompted seven School Administrators to suggest that more feedback would contribute towards an improvement in the school registration process. One School Administrator explained this in the following manner.

Yes, I think at that stage I think I would have liked some feedback prior to the visit (sic). I think there was a step lacking there. Because it went in, was reviewed, and then basically there was a visit. Any questions about the policies and what not, are kept for the visit. Whereas I would have liked, because look (sic), there are oversights sometimes, and if there was something I gave incorrectly, I would have preferred to know earlier. (J.1.iv)

Related to the issue of improved feedback, all of the School Administrators pointed out that effective communication was a key concern. School Administrators suggested that the feedback should be provided in a more timely and prompt manner. Seven School Administrators shared that they had to wait some six months before receiving feedback regarding the results of their school registration application. What follows is one School Administrator's suggestion that feedback should be provided sooner.

Absolutely, pointless, it took six months, May, June, July, August, September; I think maybe October or November. Six months by which time all the steam gone out and there's no time to do anything until March of the next year. Like what's the point, why did that take so long? It should have only taken one month to receive the report! (G.2.iii)

The Registration Officers

The role of the Registration Officers is pivotal in the formal school registration process. As the people who evaluate and formulate the recommendations concerning a school's registration application, School Administrators considered the interaction between the School Administrator and the Registration Officer to be a very important part of the school registration process. School Administrators pointed out that the skills of the registration officer were essential and in some cases, might be improved. When asked to explain, one School Administrators stated.

I think that the interviewers on the registration panel, they need to be real (sic). Their appointment needs to include their own interview skills and relationship skills and manners of being able to manage and oversee this sort of process. And I think that's really important, the human element. And they need to be very supportive and positive to schools, rather than just being critical and condemning. (F. 2. iv)

In addition to the possible improvement of the inter-personal skills of Registration Officers, School Administrators suggested that the school registration process might be improved if the Registration Officers would spend more time at the school. One School Administrator said, "...they left earlier than we thought. I think it was around 2 o'clock that they left. (B.2.ii)

Connected to a concern regarding how much time is spent by the registration panel at a school, three of the School Administrators felt that the Registration Officers needed to show greater interest in the staff and students. When asked to clarify this thought, one School Administrator described the situation in the following manner.

I thought that the registration officer's contact with the children and the teachers was extremely cursory. I don't think they even had a conversation with any of my teachers. I think my suggestion for next time is that they actually come, take their time and just visit some different spaces and sit and listen and observe. That's how people support and find out about schools. So more listening, taking it in a bit more (sic). (G.2.iii)

Another School Administrator added that a two day visit might be very beneficial in dealing with any nerves or anxiety surrounding the school registration process. This is how she explained this suggestion.

He should have stayed longer. So that all the things you want to say, which don't come out the first day, can come out. You know, with nerves and anxiety and all that sort of thing (sic). You can't always get it out, well I can't, maybe other people are more able (sic). (B.2.ii)

Registration Criteria

Six School Administrators suggested that the formal school registration process could be improved if School Administrators could take charge of school registration criteria. School Administrators stated that the current twelve criteria used in the formal school registration process were too broad and too difficult to review during only one school registration application. As evidence and indicative of the opinions of other School Administrators, the following explanation was offered by a School Administrator.

I suggest that we get a more frequent registration process, with less pressure and not all of the 12 areas at the same time. That's asking a lot of a panel and asking a lot of a school. And in a way, trying to break that into smaller chunks and having it more often would make it less threatening and more part of the normal reporting cycle. (C. 3. iii)

Rather than a big test, which it seems to be, to me it would be more helpful if you would have less of just doing stuff to prepare for the panel (sic). Because, that is what you are doing towards the end. You look at x, y, and z because they are going to look at x,y, and z. Rather then we need to look at x, y, and z, because we need, for example, facilities for disabled kids. (C.3.iv)

An Internal Review Option

Four School Administrators considered that the role of the School Administrator within the formal school registration process is passive and indicated that the formal school registration process would be improved through the greater involvement of the

School Administrator. Currently restricted to the submission of a school registration application and responding to the questions posed by the registration panel, they asked about an internal review option. One School Administrator explained this situation with a reference to the school registration process in Victoria, Australia.

It might be interesting for this state to investigate what other states are doing; I speak of Victoria. [A colleague there], that I know; they have reached a point in their registration process where they can actually do it themselves. They've had external processes, but they opted in the next round for them to do an internal review (H. 2. iii).

Clearly they've got to reach benchmarks and probably send in materials and whatever else. But I thought that was an interesting way of doing things. And, it may also adjust the workload in a different way, for those responsible for the process. Because it's obviously very time intensive and so on. And, my understanding is in that Victoria they (i.e. school administrators) can opt to do it that way or they can still send the people to come in. (H.2.iv)

The data indicated that there were five improvements that School Administrators would like to see implemented for the improvements of the school registration process namely: (1) feedback given to School Administrators should be more frequent and timely, (2) interview-skills training for Registration Officers should be introduced, (3) the Registration Panel should stay longer and show greater interest during their inspectorial visit to the school, (4) a reduction in the number of registration criteria reviewed at one time, (5) School Administrators should be given greater control of the registration process through an internal review option.

Registration Officer Selection

As previously described in Chapter Two, it is the Minister of Education, who, on the recommendation of the Department of Education Services, appoints the registration officers for the formal school registration process. Once appointed by the Minister of Education, a School Registration Manager from the Department of Education Services determines the inspection schedule and the Registration Officers who will review a

school registration application. School Administrators have no input in either the schedule or the selection of the Registration Officers. Two issues in regards to the Registration Officers were raised by the School Administrators namely, the need for greater continuity and consistency.

Continuity

In regards to the issue of continuity, School Administrators reported that the current random selection procedure of Registration Officers created an uncertain situation. School Administrators found it difficult to relate to the school Registration Officers and reported that the Registration Officers were unable to note the improvement that the school had achieved. School Administrators highlighted the benefit of having at least one Registration Officer who is familiar with the school that is under review. One School Administrator explained it in the following manner.

The thing that I think is important, which was also strength of the process (sic), is having that continuity of one person. Now that may or may not be logistically possible. It may have been circumstantial, but to have Walter (pseudonym) come to us twice, he was like the link person (sic), and I could see great value in that. (H. 2. ii)

Consistency

The second issue that concerned School Administrators was the need for the notion of consistency. Eight of the School Administrators described how the advice given during one school registration process may or may not be consistent. Conflicting advice had led to increased confusion and unhappiness with the school registration process. Evidence of this issue was shared by one School Administrator in the following manner.

...we have these arguments about when school should start and PDs and stuff and I'm always saying we need to be open this many days. And, they'll say,

“No, he told us it doesn’t matter. Yet our man didn’t say that to us. So we have different messages come across and I guess whether or not you believe them makes the difference. (K. 3. iii)

The data revealed that School Administrators want the formal school registration process to be consistent in the advice or recommendations that are given to School Administrators and they suggest that at least one registration officer should be familiar with the school that is being reviewed.

Problems in School Registration

The data revealed that the school registration process is a difficult challenge and places heavy demands on the School Administrators. One School Administrator joked, “It is a necessary evil (C.4.i.).” School Administrators identified four issues of difficulty in the formal school registration process.

First, the School Administrators unanimously affirmed that the time required to prepare and complete the school registration process is very demanding. The data indicate that School Administrators spend months in preparing for the formal school registration process. One School Administrator described it this way.

Yeah, it was very, very onerous, it dominated the whole months beforehand and it probably would have been longer than that, except that’s as long as I had to prepare for it. The whole staff were totally absorbed, completely taken up with it for many months and the actual visit was quite disappointing then on the day (sic). (G.1.ii)

Second, the data shows that School Administrators found the formal school registration process to be very stressful. School Administrators spoke of being very nervous, anxious and feeling weighed down by the burdens of preparing for it. Evidence of this stress was quite apparent in the following description given by one School Administrator.

I know, he said that ‘we were fine’, but we burst into tears. That tells you the sort of stress that we were under. (B.1.iii)

Third, the data revealed that the nature of the formal school registration process resembled, for School Administrators, a testing situation and brought back testing fears not unlike those faced by the students in their schools. More than half of the School Administrators spoke of how the fear of being tested had contributed to making the formal school registration process a difficult experience. One School Administrator directly linked the fear of testing with feelings of nervousness.

It’s somewhat of a nerve-racking procedure; because of course; you’re getting tested and evaluated by an outside people (sic). (C.1.i)

Fourth, the data showed that School Administrators were required to submit many school documents and policies which relate to the twelve criteria used in the formal school registration process. While the exact number of school documents was not mentioned by school administrators, they felt and reported that the number of documents needing to be completed was excessive. One School Administrator shared the following.

It was very, very labour intensive. There are a lot of documents to get together and I also feel, if something dramatically changes with a structure of a school, then I can understand why they’d need all that stuff again. (J.1.i)

The data revealed that the formal school registration process is a difficult challenge for School Administrators. It requires a lot of time in preparation. It is a stressful experience and causes fears to arise. School Administrator reported feeling nervous about school registration and the number documents required for submission was considered to be excessive.

Important Criteria

Although the twelve criteria employed within the formal school registration process are considered by the Department of Education Services to be equally important (see Chapter Two), the data revealed that school curriculum criterion was considered to be most important by the inspectors. While one School Administrator also stated that all of the criteria in school registration are equally important (H.1.iv), the remaining School Administrators identified three key criteria within the school registration process namely: School Curriculum, Care for Students and School Finance.

School Curriculum

Central to the twelve criteria of the formal school registration, the data revealed that the School Curriculum criterion was emphasised by the Registration Officers. School Administrators spoke about ‘what’ their students were learning. They suggested that it is the school curriculum that forms the heart of a school’s purpose. Evidence of this is highlighted in the following School Administrator’s explanation.

For me, school curriculum was most significant. It was a question about the curriculum. We were concerned about the implementation of the Australian Curriculum. That’s where we were at. And, that’s the reason why that had the most impact. That’s the main thing.” (I. 1. v)

An issue that was raised by School Administrators regarding the school curriculum criterion concerned the implementation of a new Australian Curriculum. Eight School Administrators felt that the introduction of a new curriculum had created a confused situation. School Administrators were unsure about which curriculum would be viewed as the standard of formal school registration. One School Administrator, who was about to submit a school registration application wanted to share this frustration created by the uncertain guidelines for the school curriculum criterion.

One of the difficulties that we are looking at is that, we are in a process of transition between Curriculum Frameworks and Australian Curriculum. That's quite a difficult period, because they (registration panel) are obviously looking for scope and sequence. But we are still operating in a curriculum framework policy format. So, we are half way between one and the other. And we don't really know what the expectation is of the registration board. So that's a bit of an unknown, and it's difficult to make sure that we have it nailed down properly. And I not sure if anyone knows what properly is, or where everyone should be at the current point of time (sic). (C.3.i)

So for me, that is the most challenging. Because it's so vague in that sense, is, (sic) how much of the curriculum framework will be expected by the registration panel. In view of the fact, that they have dismantled and gotten rid of it anyway. So, we have abandoned bits of it; but have we gone too far by abandoning bits of it? We are adopting the new material and I am happy with that, but in doing that, actually we've forgotten a number of things that were formerly required. So we'll be judged with that. Who knows, I guess we'll find out next time. (C.3.ii)

Care for Students

The data revealed that the Care for Students criterion featured significantly in the preparations completed by School Administrators for the formal school registration process. Observation notes taken while on site and during discussions with School Administrators, recorded signs and posters which were aimed at promoting the Level of Care for Students. Staffroom posters such as, "Those Who Care, Teach" and "Students are our first priority" underlined the emphasis placed by School Administrators on the Level of Care for students. School Administrators spoke about how careful attention had been paid to the development and implementation of policies and procedures aimed at improving student well-being. In eight of the fourteen interviews, work on the development of 'lockdown' policies and procedures was mentioned. The School Administrators pointed out that the 'lockdown' policy had been targeted for review by the registration panels. Evidence of this situation is shared by a School Administrator.

Because this would have been our second registration, because we've got a lot of policies there already, it was just a matter of fine tuning and thinking, 'What do we need to change and how have we changed since our last one, and what do we need to change.' (sic) Oh, we didn't have a lockdown policy, so then we needed to get a lockdown policy and things like that. So, I think every time you are registered you have to just dust off your policies and revamp them and change them a bit. (M.1.i)

Closely tied to the 'lockdown' policy development, the data revealed that School Administrators maintained a proactive attitude to this criterion. One School Administrator described an informal internal review that was conducted prior to the submission of the school registration application. The data revealed that a similar type of internal review process to ensure the Care for Students had occurred in eight of the fourteen schools. What follows is one School Administrator's description of that situation.

As you know, we'd completed our own internal review prior to registration. Bill and Sally (pseudonym) came in and both had a very different approach. Bill had a very much policy, OH&S approach, making sure boxes are ticked approach. This was good. It was good to get that perspective. Sally's perspective was much more about, 'Yeah, make sure you've got all that stuff, but make sure you don't forget about the core business. And, don't forget to get across what you're currently doing, how good it is and be proud of that, as well as the cultural context.' So once we finished the whole raft of policies, and we'd developed them, it was a good process. It was an excellent process to go through, and helped refine what we were doing. (J.1.iii)

School Finance

School Administrators generalised their discussions regarding school finances, due to the confidential nature of this information. However, the data indicated that they considered the importance of School Finance within the formal school registration process. In some cases, School Administrators suggested that sound financial management had contributed to a successful school registration. When asked to explain this, one school administrator shared the following.

Our school, because we've been around for a while and we've had good solid management in the past, we're in a good financial position. So, none of that is an issue that I ever think about. Which is good! Because you don't have to, so we're not struggling (sic). So, we don't have to worry about whether are we going to be able to pay our teachers next month, we're fine. (K.6.ii)

The data revealed that although all of the twelve criteria used in the formal school registration process are of equal importance, according to the Department of Education Services, three criteria were found to be more important by School Administrators. School Administrators emphasised the need for clear school curriculum guidelines, effective policies to ensure Care for Students and a strong School Financial position as most important.

School Registration Recommendations

At the conclusion of the formal school registration process, the recommendations of the registration panel instruct the School Administrators regarding school improvements that are needed in order to obtain a renewed registration period. Five of the School Administrators considered that the directive and instructive nature of the recommendation intrusive and lessened the opportunity to achieve school improvement. Evidence of this situation was described by one School Administrator in regards to a recommendation that had instructed the school to reduce its financial debt level. As pointed out in the following description, the recommendation had ignored the changing enrolment of the school.

....our school has been growing very fast. Our enrolment continues to increase. The panel knows that and should have expected a debt problem, that's not something which should penalise the school.(sic) They want less debt, but should be happy that we are growing and trust the money will follow. We can't reduce the debt right now. They don't need to come back again. This is a good school! (F. 2. iv)

The conflicting nature of directive and instructive school registration recommendations was most evident with School Administrators in locations where those recommendations threatened to compromise the school context. In some cases, School Administrators tended to disregard those school registration recommendations that had ignored the school context. When asked to explain, one School Administrator described how the recommendation concerning a school enrolment register completely ignored the school context concerning student enrolment. What follows is the brief description of that situation.

.....some of the recommendations, like the one about the enrolment section, he said to me, "You don't have your enrolment register." I said, "Well I do, I just don't have a document that's called the enrolment register. But all the information is right here." The problem we have is, in any given day, we could have 15 random kids, that don't normally come to our school. (sic) So, I'm not going to enrol them, but they're here. I don't have all their stuff (info) and so, I'm not going to enrol them here for two days and then they leave. He said, "Yeah, yeah, I understand." But then he still put it into report recommendations. And, it really annoyed me. (K.3.iv)

The data revealed that in some cases the directive and instructive nature of school registration recommendations impedes school improvement when the school's changing circumstance and school context are ignored by the Registration Panel. In such situations the recommendations become a source of frustration for School Administrators and may be partly disregarded.

Summary

This chapter considered the qualitative data obtained from fourteen one-on-one semi-structured interviews held with School Administrators. The data indicated that School Administrators had a diverse range of opinions about the formal school registration process. Comments made by School Administrators, both the positive as well as negative, highlighted the complexity of the issues surrounding the formal school

registration process and the problem of uniform registration criteria, some of which are difficult for some school that have different educational philosophies. The data suggest the need for the on-going development and refinement of the formal school registration process.

One finding revealed that the personal circumstances and school situation of a School Administrator affected the formal school registration process in a number of cases, but not all. In situations where School Administrators lack resources and support, where there is a unique school culture or an alternative educational philosophy and non-traditional school practices, the formal school registration process need to adept accordingly.

A second finding indicated that some School Administrators reported that the formal school registration process had contributed to school improvements. These school improvements include the following: (1) School Administrators who feel an increased sense of accountability, pride and confidence, and (2) a stronger sense of staff cohesion and unity.

A third finding is that the school registration process could be improved should the following suggestions for improvements be implemented: (1) feedback given to school administrators that is frequent and timely, (2) interview-skills training to assist the School Registration Officers, (3) Registration Panels should stay longer and show greater interest during their inspectoral visit to the school, (4) a reduction in the number of registration criteria reviewed at any one time, (5) School Administrators should receive greater control of the registration process through an internal review option.

In a fourth finding, the data revealed that some School Administrators want the formal school registration process to be consistent with the advice or recommendations

that is given to School Administrators and they suggest that at least one registration officer should be familiar with the school that is being reviewed. They explained that the lack of continuity and consistency with the formal school registration process contributed to increased confusion and unhappiness.

In a fifth finding, most School Administrators indicated that the formal school registration process is a difficult challenge for School Administrators. They described feeling stressed, afraid and nervous about school registration. In addition, the number of school documents that need to be submitted to the registration panel was considered to be excessive.

A sixth finding revealed that the School Curriculum criterion is a very important criteria of the formal school registration process. School Administrators mentioned it and the Care for Students and School Finance criteria as important. School Administrators stressed the need for clear school curriculum guidelines and an effective lockdown policy to ensure Care for Students. They also reported on the benefit of being in a strong School Finance position during the school registration process.

A seventh finding highlighted by the data revealed that School Administrators questioned, ignored and resented school registration recommendations that neglected to take into account the school's changing circumstances or cultural context. It was felt that such recommendation hampered school ability to improve. School Administrators indicated that such recommendations became a source of frustration and could perhaps be partly disregarded.

In the next chapter the data analysis continues with an examination of the written comments from School Administrators regarding the twelve criteria used in the formal school registration process.

CHAPTER TWELVE

DATA ANALYSIS (PART 7)

SCHOOL ADMINISTRATOR COMMENTS

This chapter examines the written comments of School Administrators regarding school improvements and the formal school registration process. It builds on the findings previously reported in Chapter Eleven and incorporates the description of twelve criteria presented in Chapter Two. The data were analysed in the same way as in Chapter Eleven. In particular, it outlines the thoughts and opinions of School Administrators regarding the twelve criteria that are used in the formal school registration process; (1) School Governance; (2) School Financial Viability; (3) Enrolment & Attendance; (4) Number of Students; (5) Instructional Time; (6) School Staff; (7) School Infrastructure; (8) School Curriculum; (9) Student Learning Outcomes; (10) Care for Students; (11) Disputes and Complaints; and (12) Legal Compliance. This chapter considers the attitudes of school leaders regarding a fundamental question that underpins this study namely; does the formal school registration process lead to school improvement?

The data, explored the School Administrators' response to open-ended questions on the study questionnaire; e.g. *Please provide any additional comments on School Governance and School Registration*. Of the sixty-five School Administrators who completed all of the twelve sections of the study questionnaire, 29 (45%) included an additional written comment. The number of additional comments added in the questionnaire was evenly spread across all of the twelve parts of the questionnaire. The comments were carefully examined and then imported for further analysis into the

Nvivo 10 computer (QSR International, 2012). The written comments were coded using a letter to denote the questionnaire part, a number to match the one assigned to the participant questionnaire (1-65), and a Roman numeral to indicate the line number. For example, a written comment regarding School Governance and School Registration made by a School Administrator on the 4th questionnaire that appears on the 2nd line of the transcript is coded as A.4.ii.

The data revealed that School Administrators were divided in their opinions on whether or not the formal school registration process had contributed to an improvement at their school. While School Administrators acknowledged a number of school improvements brought on by the formal school registration process, they also described some issues where formal school registration had no effect on school improvement. The need for the on-going development and refinement of the formal school registration process was evident through the analysis of data within each of the criterion.

School Governance

The data showed that the formal school registration process was instrumental in bringing about school improvements in School Governance. Supporting evidence for this analysis concerned two aspects of the recommendations regarding School Governance. First, School Administrators indicated that the recommendations issued by the Registration Panel, which must be implemented within a certain period of time, became the stick to spur the School Council into action. As one School Administrator put it.

The panel's recommendations on governance processes acted as the stick to spur our Board into improving in the area of governance. Some of the reforms were already on the drawing board; now they have a time line linked to them. (A.9.i)

Second, School Administrators agreed that the challenge of dealing with a School Community's resistance to change had been eased by the Registration Report which is issued by the Registration Panel. School Administrators commented on how they had used the Registration Report to help them convince the School Community of the need for change. One School Administrator shared the following.

The School Registration process has highlighted the need for good governance and good management. While we were aware of this, the registration process gave our action in this impetus and urgency, and the Registration Report helped "sell" the need for change to the School Community. (A.39.iii)

As observed in Chapter 11, the data revealed that School Administrators believe that the formal registration process must acknowledge the school's context in regards to School Governance. School Administrators located at remote schools indicated that their unique school context and governance model conflicted with the expectations and standards of the formal school registration process. One School Administrator described this conflict in the following manner.

It was an interesting process to go through in this area. But what was not understood by the registration panel is that much of our school's governance set up is related to our local community's Aboriginal Association and it is not something we have any control over. (A.56.i)

Closely tied to the previous issue, the data showed that two School Administrators resented and challenged the legality of the school registration process. The data revealed that the recommendations issued by Registration Panels extended beyond the requirements of School Governance criterion. School Administrators stated that the formal school registration process was an encroachment upon their freedoms within a democratic state. One School Administrator outlined the situation in the following manner.

The role, mandate of the DES inspectors is to ensure minimum compliance with the Act - no more. Although our inspector may have a preference for a particular 'Board' structure; For example, the separation of a principal as a voting member of the Board - it does not mean that they can determine that to be a 'condition of re-registration' and a lowering of the re-registration time period. (A.58.ii)

The formal school registration process has been instrumental as the push needed to initiate and promote some school improvements in school governance in some instances. However, in some cases, School Administrators felt that the recommendations for school improvement exceeded the requirements of the school registration criteria.

School Financial Viability

School Administrators unanimously affirm the importance of school finance within the operation of non-government schools. The data revealed that the significance of this criterion was largely unrelated to the requirements of the formal school registration process. School Administrators wrote that their school finances were well managed. School Administrators commented that the school was in a solid financial position and the school enjoyed excellent financial management. The situation is described in the following manner.

Financial management is too important to be left to any input from the registration panel. It is a continual process of consideration and improvement and the registration panel has almost no input into the improvement process. (B.37.ii)

The data provided an indication of the importance of this criterion by the written comments regarding situations wherein it became apparent that four schools had provided the Registration Panel with more data than was actually required by the formal school registration process. One School Administrator explained the following.

The registration process had zero impact on the financial management at all. In fact, we provided significantly more data than they required. (B.40.i)

Further, the data revealed an issue of broken trust between the School Administrator and the Registration Panel. Evidence of this featured in the concerns of two participants. These School Administrators questioned the financial expertise of the school Registration Panel. One School Administrator wrote the following.

It is a great irony that some of the Re-rego (sic) inspectors may well have;
(1) little financial expertise
(2) poor past record of financial management
(3) less qualifications than board members. (B.2.viii)

The data indicated that School Financial Viability is considered to be an important aspect of non-government schools and a significant criterion even without the formal school registration process. There were very few school improvements in school finances that were due to the formal school registration process. School Administrators emphasised the need for schools to have sound financial management, but stated that this was already being done. Two School Administrators questioned whether the Registration Panel was sufficiently qualified to review the financial position at their school.

School Enrolment and Attendance

Although as previously explained in Chapter Two, wherein the policies and procedures concerning the enrolment and attendance of students are described as being straightforward and quite prescriptive, the analysed written comments indicated that this formal school registration criterion required increased attention. School Administrators raised three issues related to school improvements in school enrolment and attendance.

First, while schools may have had enrolment policies and procedures in place, they were not always followed. Five School Administrators described how that the routine nature of the process in school enrolment had caused complacent attitudes concerning the need to update records. Evidence regarding this situation was clear from written comments such as.

As a result of (school) registration the school put in place a number of policies and procedures not previously in place or, if in place, were not ardently followed. (C.9.ii)

We had become familiar with our system, but changed the enrolment policy and procedures after the registration officials visited the school. (C.10.i)

Second, the data indicated that parental control over student attendance had influenced the circumstances surrounding this formal school registration criterion in some cases. In particular, School Administrators noted how student attendance had been affected by parents who take their children away on holidays during school times. School Administrators appeared powerless in attempting to address this situation. Evidence of this issue was highlighted through the following written comment.

There has been some improvement due to registration; however there are still some parents who take their children off school for holidays. (C. 44.i)

Third, school Administrators commented on how the transfer of students between schools had influenced school improvements in this school registration criterion. Information on student enrolment and attendance was difficult to monitor when students moved from one school to another. Four School Administrators specified that the formal school registration process had led to the introduction of a new student tracking system. One School Administrator wrote the following.

Due to re-registration, a new attendance and tracking system was put into place. (C.65.i)

Number of Students

While information regarding the Number of Students is essential during the registration application process of a new school, since schools seeking to be registered for the first time must be able to meet the minimum enrolment requirements, once a school has been established and is registered, this criterion loses its significance. The data showed that School Administrators considered this criterion to be irrelevant and unable to contribute towards any school improvement. Evidence of this situation is noted in the following comments.

The registration process has little to do with student numbers other than the verification of numbers. (D.5.i)

Totally unrelated to the registration process and/an outcome. (D.50.ii)

However, two School Administrators noted that when the school published the positive registration report, an increase in the enrolment of students occurred. The School Administrators suggested that there was an improvement in the number of students at school, because the school had been able to advertise a positive registration report. One School Administrator wrote the following comment.

Our student numbers increased following last year's positive registration report. Student-teacher ratio is up but okay. (D.44.ii)

Instructional Time

Although the legal requirements related to the amount of Instructional Time is pre-determined and directly prescribed by the Minister of Education of Western Australia, the data revealed that eleven School Administrators needed to increase the school's instructional time to comply with the registration. Two issues emerged regarding the legal requirement of instructional time. The first issue concerned the

acknowledgement by School Administrators that their school had Instructional Time anomalies that needed to be addressed. One School Administrator had increased the school year by two days. Another School Administrator stated that every school day had been lengthened by five minutes to comply with the regulations. School Administrators noted that the legal requirements, as set through the formal school registration process, had prompted the improvements. One School Administrator directly accredited the registration visit with causing this improvement.

Registration visits are regarded as very valuable. Preparation for these visits result in ensuring that everything is compliant to legal requirements, e.g. instructional time. (E.48.i)

The second issue regarding the legal requirements of this criterion concerned the level of stress that School Administrators experienced when confronted with the need to change instructional times. Two School Administrators noted that staff unity and cohesion had been tested by the prescribed requirements of the formal school registration process. One School Administrator wrote the following comment.

In the run up to registration, the principal and his leadership team worked hard to tightening up all policies and procedures, especially the instructional time standards. This began to raise a lot of stress among the staff, leading to staff disgruntlement and a riff among staff and school leadership. This showed up in recess times and issue surrounding the professional development calendar. (E.50.iii)

In response to the formal school registration process, eleven School Administrators in this study discovered that they needed to implement a school improvement by way of an increase in the instructional times of their students. Two School Administrators wrote that they had experienced stress when trying to maintain staff unity while implementing changes imposed on the school by the formal school registration process.

School Staff

The data revealed that School Administrators much appreciated the work of their staff in regards to the application for and success of formal school registration. In particular, the written comments highlighted three aspects of the School Staff criterion.

First, School Administrators were of the view that the professional development of staff was important for the school improvements sought on account of the formal school registration process. This was supported by data pointing to the acknowledgement of School Administrators regarding the need to fully resource the professional development of staff. School Administrators mentioned making time and money available for school improvements that are directly linked to the school staff criterion of the formal school registration process. One School Administrator pointed to this matter and included a mention of positive relationships with parents.

Staff are very professional, we put a great deal of effort, time and money into developing them professionally. We work hard to foster positive relationships with parents. (F.47.ii)

Second, the data analysis indicates that the ethos and culture of a school contributes significantly to meeting the requirements of the school staff criterion. As indicated previously (see also Chapter Three), the school registration panel expects to notice good staff morale during their visit to the school. In connection with this, School Administrators wrote about the dedication of staff that were prepared to go beyond the call of duty. Evidence describing this situation follows in this School Administrator comment.

Staff are very conscious of the school ethos. They are professionals. Attention is paid to continued professional development of teaching staff. Positive developments are evident. (F.48.i)

Third, School Administrators agreed that the introduction of the performance appraisal of staff dominated school improvements associated with the requirements of the school staff criterion. Seven School Administrators in this study had, as a result of the formal school registration process, introduced a new performance appraisal system for staff. One School Administrator described the situation in the following manner.

We developed a new professional review process, because that was the accountable thing to do - completed just before registration. Our staff are very professional, it helped us during registration. (F.45.ii)

School Infrastructure

School improvements associated with school infrastructure were generated by the formal school registration process. Evidence supporting this analysis revealed that prior to the inspectoral visit of the Registration Panel, the schools in this study had received “a good face-lift”. School Administrators wanted the school grounds to look good and listed examples of building improvements. What follows is a commit regarding this situation.

Registration prompted a few minor maintenance issues to be addressed, just in case registration picked up these items as issues. (G.59.i)

Furthermore, School Administrators highlighted two issues regarding the school infrastructure criterion. First, the formal school registration process was instrumental in bringing about school improvements related to the policies and procedures concerning Occupational Health and Safety. Six School Administrators wrote that the school did not have an Occupational Health and Safety Policy prior to the school registration application. One School Administrator wrote the following statement.

There was no OHS Policy in place prior to the school’s re-registration in 2009. We now have new OHS policies and procedures for both staff and students. (G.65.i)

Second, twelve School Administrators indicated that the school had adopted the practice of conducting a safety and health audit in response to the formal school registration process. Such audits were introduced to inspect the school grounds and buildings, ensuring the safety of staff and students. One School Administrator described the following.

The team (i.e. Registration Panel) wanted a safety and health audit completed through an external safety audit. Several OHS changes were made as a result. (G.40.i)

School Curriculum

Supporting the findings regarding the interviews held with School Administrators, the written comments provided by School Administrators regarding School Curriculum expressed the opinion that the School Curriculum criterion is considered to be an essential aspect of school improvements. School Administrators identified three aspects that underlined the importance of school curriculum.

First, three School Administrators pointed out that the whole school planning strategy had led to a positive change in school culture. The staff members had adopted a collective and helping-each-other approach in the development of curriculum. One School Administrator wrote that this was an important improvement.

This has been a very important area of improvement for us. Registration has been a driver for more whole school planning, which has been helpful to change the previous school culture of isolationism between learning areas. The Early Years Learning Framework has also been a factor in this. (H.4.iii)

Second, the introduction of a new Australian Curriculum had influenced school improvements associated with school curriculum. School Administrators pointed out that the cross-curricular demands of the new Australian Curriculum were tied in closely with the requirements of the school curriculum criterion. Schools were required to

submit curriculum documents that had incorporated the new Australian Curriculum.

Evidence in support of this analysis is highlighted in the following statement.

Curriculum development receives daily attention by the school. It's a must! The introduction of the Australian Curriculum has had a major impact and the school has strongly promoted cross-curricular planning. But we were ready for the registration panel. (H.48.iii)

Further, School Administrators at Steiner Schools outlined the complexity of the school curriculum criterion. School registration officers from the Department of Education Services struggled to recognise this and other alternative educational philosophies. One School Administrator made the following statement.

We have a classical Steiner curriculum. Prior to registration, extensive work was implemented to demonstrate where and how the curriculum meets the state curriculum requirements. It ends up to be a bit of a waste of school time to satisfy gov't (sic) agencies when we feel satisfied that children are learning what, when and how to read. (H.50.i)

Panel members 'must' be familiar with non-traditional curriculum; teaching and learning; assessment and curriculum planning methods, if they are going to cast judgment on such things. You cannot determine compliance or competency without a base knowledge of philosophy and methodology and curriculum. (H.50.ii)

Third, although the data revealed that school improvement in school curriculum was linked to the formal school registration process, the analysis also showed that the issue of workload had caused difficulties for School Administrators. School Administrators observed that the workload of staff had increased significantly in response to the requirements of the school curriculum criterion as part of the registration process. One School Administrator commented on how this situation had led to increased levels of stress amongst staff members.

The staff have always had a commitment to curriculum planning and implementation. The workload has dramatically increased due to re-registration,

raising the stress levels of staff members. However I do feel it has been essential in adding any value to the student's experience. (H. 18.ii)

Student Learning Outcomes

The data revealed that School Administrators were divided in their opinions regarding school improvements that are related to the Student Learning Outcomes criterion and due to the formal school registration process. Nineteen School Administrator's written comments supported the requirements of this criterion being linked to the results of students tests collected through the National Assessment Plan for Literacy (NAPLAN). However, School Administrators who objected to the use of the NAPLAN test results to measure student learning outcomes wrote that there was more to student learning outcomes than a measurement of literacy and numeracy. They emphasised that such a narrow measurement of student learning would neglect the value of other learning outcomes such as the Arts. The following comments highlight this situation.

The registration panel should consider more than just test results when judging student learning outcomes. Our students are excellent in the Arts. (I.18.i)

The registration panel relied far too heavily on NAPLAN through My School (i.e. the website which records a school NAPLAN results). I was able to show other data to create a better picture of the student learning. (I.37.i)

A similar concern was evident from a Steiner School Administrator, who wrote that the importance of play in learning conflicted with the practice of testing students. The following comment indicated this concern.

Steiner schools question the role of NAPLAN in a young child's learning, we had to explain that to the registration panel. (I.50.ii)

The School Administrators who welcomed the measurement of student learning outcomes based on NAPLAN test results expressed confidence in meeting the requirements of this criterion during the formal school registration process.

These items (i.e. the requirements of the student learning outcomes criterion) were quite well on track and the registration panel couldn't argue with our NAPLAN results! (I.9.i)

Level of Care for Students

School Administrators wrote that very few school improvements relating to the Level of Care for Students criterion are due to the formal school registration process. Three School Administrators wrote that the level of care for students characterised the school and the parents expected this to be a school priority. Evidence of this is supported in the following comment by a School Administrator who stated that the care for students was embedding within the school's ethos.

The school's ethos requires optimal care for students. A directive by School Registration regarding emergency –crisis management is being implemented. (J.48.ii)

However, the data revealed that two items pertaining to the level of care for students had been addressed due to a recommendation stemming from the school registration process. First, School Administrators indicated that the absence of a lockdown policy had raised concerns. One School Administrator shared the following comment.

'Lockdown' procedure was introduced due to re-registration. (J.65.i)

Second, four school administrators reported that the lack of a crisis management process was identified during the formal school registration process. One school administrator highlighted the situation in the following comment.

The registration panel pointed out our lack of crisis management. And, other OHS (Occupational Health and Safety) processes were also identified to us through registration. (J.4.ii)

Disputes and Complaints

School improvements associated with the requirements of the disputes and complaints criterion used in the formal school registration process were rare. Although some School Administrators acknowledged the benefit of a policy regarding disputes and complaints, it was noted that such a policy is rarely needed. Three School Administrators indicated that the school had yet to receive a complaint. The following comment provides evidence of this situation.

We have never had a 'records of disputes & complaints' issue in over 30 years!!! (K.58.i)

While School Administrators were confident that this criterion was being successfully met, one School Administrator provided this additional comment which suggested that the Disputes and Complaints criterion used in the formal school registration process had caused a problem for the school. What follows is that comment.

After registration, we had an increase in complaints among parents and teachers. Registration introduced a new dispute and complaints process which led to more complaints. Professional development in non-violent communication was implemented. But this increased dissatisfaction with disputes that became clogged up at the council level, without being resolved. (K.50.i)

Legal Compliance

The analysis of the data indicates that some School Administrators were in doubt about the school improvements that are associated with the requirements of the legal compliance criterion used in the formal school registration process. The data revealed

an issue raised by the School Administrators' comments. This issue concerned Registration Panel recommendations that sought to change a school constitution, without an explanation to justify the change. In one comment it became apparent that this recommendation would create a difficult situation for the School Administrator. As outlined in the following comment, one School Administrator shared this disappointment.

The registration panel recommended changes to the Constitution that will be hard to justify. I'm disappointed that the registration visit didn't convince them of this. (L.2.i)

Similarly, this issue highlighted the need for such recommendations regarding a school's constitution to acknowledge a school community and the culture of that school community. In response to a recommendation directing the schools to adopt a new form of governance, one School Administrator wrote the following.

The panel didn't understand the close link between school and its community. They ignored 'the way we do things here'. (L.6.i)

Finally as supporting evidence, one School Administrator's comment clearly shows the complexity of school improvement related to the legal compliance criterion. A fundamental difference between the criterion requirements and a school's mode of operation was highlighted through the following statement.

The registration panel didn't understand that we work by consensus, legal compliance doesn't work in our school. We will continue to have a lot of policies 'under review'. (L.58.i)

Summary

This chapter examined the written comments of School Administrators regarding school improvements and the formal school registration process. It added to the findings previously reported in Chapter Eleven and considered the opinions of School Administrators regarding the twelve criteria that are used in the formal school

registration process. The analysis was guided by a fundamental question that underpins this study namely; does the formal school registration process lead to school improvement? School Administrators were divided in their opinions on whether or not the formal school registration process had contributed to an improvement at their school on some criteria, but they acknowledged that a number of school improvements were due to the formal school registration process on other criteria. The main finding from the comments indicates that there is a need for the on-going development and refinement of the formal school registration process.

The first finding revealed that the formal school registration process was instrumental in the push needed to initiate and promote school improvements in school governance. However, School Administrators indicated that the recommendations for school improvement must also acknowledge the context of the school under review. Two School Administrators questioned the legality of the formal school registration process, stating that it has led to a loss of certain freedoms and rights.

A second finding indicated that School Financial Viability is considered to be an important aspect of non-government schools and a significant criterion within the formal school registration process. Consequently, there were very few school improvements in school finances that were due to the formal school registration process. School Administrators stressed the need for the school to have sound financial management. Two School Administrators questioned whether the Registration Panel was sufficiently qualified to review the financial position at their schools.

A third finding revealed that School Administrators identified three issues related to the Enrolment and Attendance criterion: (1) Complacency – some schools do not always keep up with the standard of this criterion; (2) Parental Control – when

parents take their children on holiday during school time; this has a direct impact on the improvement of this criterion; and (3) Student Tracking Systems – a new student tracking system was required in some schools as a result of the formal school registration process.

A fourth finding showed that the Number of Students criterion in the formal school registration process has little impact on school improvements for established schools that have been registered. However, in some instances it was possible that the publication of a positive school registration report led to an increase in the number of students.

A fifth finding revealed that some School Administrators needed to implement school improvements by increasing the instructional times of their students. Some School Administrators experienced stress and tried to maintain staff unity when implementing changes imposed onto the school by the formal school registration process.

A sixth finding revealed three aspects of the School Staff criterion had contributed to school improvements namely; (1) schools that value and fully support the professional development of staff; (2) a positive ethos and culture; and (3) the introduction of a performance appraisal system for staff.

A seventh finding indicated that the formal school registration process was instrumental in prompting some School Administrators to improve the school's infrastructure in some cases, but not all. In addition, School Administrators introduced new Occupation Health & Safety policies and procedures, and a safety audit process to ensure the safety of both staff and students.

An eighth finding revealed that most School Administrators believe that the School Curriculum is a key criterion in the formal school registration process. They identified three aspects which underscore its importance: (1) Whole School Planning Strategies that were used to develop the curriculum and meet the demands of the school curriculum criterion. School Administrators showed how this had led to positive school culture; (2) Curriculum Issues: (i) The introduction of new Australian Curriculum coincided with and matched the requirements of this criterion; ii) The requirements of the School Curriculum criterion do not recognise an alternative educational philosophy. (3) Workload that increased due to the requirements of the school curriculum criterion has led to difficulties such as raising the stress levels of staff members.

A ninth finding of the data revealed that School Administrators were divided in their opinions regarding the use of student test results in assessing whether or not a school had met the requirements of the student learning outcome criterion. One third of the School Administrators suggested that the requirements of this criterion should go beyond the scores of students on a NAPLAN test. In addition, one School Administrator located at a Steiner School indicated how this situation conflicted with the educational philosophy of Steiner schools.

A tenth finding indicates that some school administrators believe that very few school improvements related to the Level of Care for Students criterion are due to the formal school registration process. Two school improvements items which required attention were identified, namely: (1) a lockdown policy and (2) a crisis management process.

An eleventh finding revealed that some school improvements associated requirements of the disputes and complaints criterion were rare. One School

Administrator however, described how the formal school registration process had led to an adverse school situation concerning disputes and complaints.

In the twelfth finding, some School Administrators indicated that they were disillusioned about the prospect of school improvements which are associated with the requirements of the legal compliance criterion. School Administrators expressed disappointment with recommendations concerning a school's constitution. Similarly, recommendations that concerned school culture are questioned by School Administrators.

The next and final chapter of this study presents a summary and considers the major findings from the quantitative and qualitative data analysis. It answers the seven key research questions and concludes with a discussion and the implications of this study.

CHAPTER THIRTEEN

SUMMARY, DISCUSSION and IMPLICATIONS

This chapter brings together the major findings of this study. It considers the analysis of data gathered from the Rasch measures used to create a linear scale of School Administrators' beliefs that actual school improvements were due to formal school registration (from Chapter Six) and a linear scale of School Administrators' beliefs that expected school improvements would occur as a result of formal school registration (from Chapter Seven). It summarises the quantitative data gained through twelve Guttman Scales and points to the connections between the findings of the quantitative data analysis (from Chapters Eight, Nine and Ten). The chapter then pulls together the issues presented through a qualitative data analysis (from Chapters Eleven and Twelve). It begins with a summary of the study. Next the chapter provides a summative answer to the seven key research questions posed in Chapter One. It then presents a discussion and addresses the 'so what' question of this study. Next, the chapter highlights the implications of this study for School Administrators, the Department of Education Services, Registration Officers and future researchers. Lastly, the chapter presents the conclusion of this study.

Summary of the Study

The main purpose of this study was to investigate the relationship between school improvement and the formal school registration of non-government schools in Western Australia, when placed within the context of twelve criteria used during the formal school registration process. It considered what School Administrators believe regarding the relationship between school improvement and formal school registration. And, in their beliefs, which of the twelve criteria used in the formal school registration

process may have contributed to school improvement. The study posed seven key research questions to create an objective measure regarding the relationship between school improvements and the new formal school registration process. Data were collected from two main sources: (1) a study questionnaire (items 60) (N = 60) and (2) one-on-one interview discussions (N = 14). The quantitative data were analysed with the RUMM 2030 (Andrich, Sheridan & Luo, 2010) and SPSS (IBM, SPSS 21) computer programs respectively. The process of the quantitative data analysis was strengthened through the multi-quantitative data analysis of a Rasch Measurement Model and twelve Guttman Scale measures. The qualitative data analysis employed an analytic induction method of Miles and Huberman (Miles & Huberman, 1994, Punch, 2005) and made use of the NVivo10 computer program.

The main finding of this study revealed that, according to the beliefs of School Administrators at non-government schools, there is a relationship between school improvement and the new formal school registration process. However, while School Administrators responded positively, as well as negatively, with beliefs that school improvements were due to the formal school registration process (see also Tables 10.1 to 10.8), the main finding of this study revealed that it was possible to describe this relationship through the construction of two linear unidimensional scales to measure the beliefs of School Administrators. The new Rasch-created linear scales, which when compared to a 'ruler', identified 48 actual (and 47 expectant) school registration items that were taken from the twelve criteria used during formal school registration. Hence, as it were, on the one side of the 'ruler', this study identified 48 (actual) school registration items which School Administrators believe are (1) very easy or easy to relate to school improvement, (2) moderately easy or moderately hard to relate to school improvement, and (3) hard or very hard to relate to school improvement. At the same

time, on the other side of the same ‘ruler’, the newly Rasch-created linear scale, also identified (1) School Administrators with LOW measures of school improvement related to formal school registration, (i.e. School Administrators who do NOT have much school improvement beyond the very easy or easy registration items), (2) School Administrators with MEDIUM measures of school improvement (i.e. School Administrators who do NOT have much school improvement beyond moderately easy or moderately hard school registration items), and (3) School Administrators with HIGH measures of school improvement related to school registration (i.e. School Administrators who experience NO problems and where school improvements due to school registration are going well on all school registration items (see also Chapter Six). The study created a new measurement which revealed more than just whether or not School Administrators believe that school improvements were due to a new formal school registration process.

In brief, the study defined the relationship between school improvement and formal school registration and identified which school registration items, when taken from the twelve criteria, were school improvements that School Administrators believed to be very easy, moderately easy, moderately hard and very hard. And, a multi-quantitative data analysis in the study confirmed its findings. This included the construction of a Guttman scale for each of the twelve criteria which revealed, (1) School Administrators (e.g. by school type, location and size) with low measures of school improvement related to school registration (i.e. School Administrators who do NOT have much improvement beyond very easy or easy school registration items); (2) School Administrators with medium measures of school improvement related to school registration (i.e. School Administrators who do NOT have much school improvement beyond moderately easy or moderately hard school registration items); and (3) School

Administrators with high measures of school improvement related to school improvement (i.e. School Administrators who had no problems with achieving school improvements on the twelve criteria). These findings confirmed the agreement between the Guttman scales and the Rasch-Created scales, and were further consolidated by the written comments of, and one on one interviews with School Administrators. School Administrators do believe that some school improvements were due to formal school registration (see Tables 10.1 to 10.7). However, contrary to this being a straight forward presumptive relationship, the exact nature of the relationship between school improvement and formal school registration is shown to be a complex entity. Research has only just begun to uncover the various aspects of this relationship. In this study the benefits derived through the use of a mixed research method have led to a number of valid inferences related to school improvement and the formal school registration process. These inferences are considered later in the discussion of this study. What follows are the answers to the seven key research questions posed in Chapter One.

Answers to the Research Questions

Research Question 1

Can a linear, unidimensional scale be constructed using a Rasch Measurement Model to measure the Beliefs of School Administrators that Actual School Improvements Were Due to Formal School Registration and contain items concerning twelve criteria used during the formal school registration process of non-government schools?

This research question was addressed in Chapter Six. A Rasch analysis revealed that the data gathered were reliable and an unidimensional measure was constructed in respect to the actual beliefs of School Administrators concerning twelve criteria of formal school registration. Forty-eight actual school improvement items, of the original

60 items provided data that fitted the Rasch Measurement Model. The data from these items formed an interval-level scale from which valid inferences could be drawn.

Seven outputs for this unidimensional measure provided evidence for an acceptable fit to the measurement model. One, the item-person and person-item fit residuals were satisfactory. This measure was close to the ideal standardized fit residuals of mean near zero and standard deviation near one. For the actual school improvements, a standardized fit residual mean of -0.18 with standard deviation 0.86 for the items and a standardized fit residual mean of -0.24 with a standard deviation of 0.77 for the persons. Two, the Cronbach Alpha and the Separation Index at 0.93 and 0.86 (actual) respectively were acceptable (the maximum value being 1), showing that the actual school improvement measures were reasonably well-separated in comparison to the errors. Three, the item-trait interaction given by the Total Chi-square Probability of 0.81 (actual) was high and near one, meaning that all the School Administrators agreed strongly about the difficulties of all the items along the scale. Four, there was good individual item fit to the measurement model with ordered item thresholds. Five, the thresholds were ordered in line with the ordering of the response categories, meaning that the School Administrators answered the response categories consistently and logically. Six, the residuals, the difference between the actual response and the response estimated from the Rasch measurement parameters, were generally within the expected range of -2 and +2, with the exception of item 42 (see Tables 6.3). Seven, there were good distribution graphs showing acceptable targeting of the items against the person measures, however, there were insufficient persons (school administrators) to cover the hard and very hard items.

The data analysis showed that there were twelve items for the Actual School Improvements Items that needed to be reworded to fit the measurement model. Table

13.1 shows how these non-fitting items may be re-worded and made available for a future study on actual school improvement due to formal school registration.

Table 13.1 Twelve re-worded items for School Administrators Beliefs That Actual School Improvements Were Due to Formal School Registration

No.	Item Wording
3.	The School Council meeting proceedings actually improved.
4	The School Council's selection and appraisal of management staff actually improved.
19.	The school's financial risk management and analysis actually improved.
23.	The daily attendance of students at school actually improved.
27.	Parental support of attendance policies and procedures actually improved.
41.	The student retention rate and tracking system actual improved.
45.	The time devoted to instruction at school actually improved.
47.	The number of school calendar days actually improved.
77.	The school's implementation of cross-curricular plans actually improved.
85.	The school's use of NAPLAN results actually improved.
91.	The school's program for students at risk actually improved.
100.	The well-being of students actually improved.

Research Question 2

Can a linear, unidimensional scale be constructed using a Rasch Measurement Model to measure the Beliefs of School Administrators that Expected School Improvements Were Due to Formal School Registration and contain items concerning twelve criteria used during the formal school registration process of non-government schools?

This research question was addressed in Chapter Seven. A Rasch analysis revealed that the data gathered were reliable and an unidimensional measure was constructed in respect to the expectant beliefs of School Administrators concerning twelve criteria of formal school registration. Forty-seven expectant school improvement items, of the original 60 items provided data that fitted the Rasch Measurement Model.

The item-person and person-item fit residuals was satisfactory. The measures were close to the ideal standardized fit residuals of mean near zero and standard deviation near one, and for the expectant school improvements, a standardized fit residual mean of -0.153 with standard deviation 0.75 for the items and a standardized fit residual mean of -0.29 with a standard deviation of 0.94 for the persons. The Cronbach Alpha and the Separation Index at 0.92 and 0.84 (expectant) respectively were acceptable (the maximum value being 1), showing that the expectant school improvement measures were reasonably well-separated in comparison to the errors. The item-trait interaction given by the Total Chi-square Probability of 0.84 (expected) was high and near one, meaning that all the School Administrators agreed strongly about the difficulties of all the items along the scale. There was good individual item fit to the measurement model with ordered item thresholds. The thresholds were ordered in line with the ordering of the response categories, meaning that the School Administrators answered the response categories consistently and logically (Figure 7.2). The residuals, the difference between the actual response and the response estimated from the Rasch measurement parameters, were generally within the expected range of -2 and +2, with the exception of item 63 (see also Table 7.3). There were good distribution graphs showing acceptable targeting of the items against the person measures, however, there were insufficient persons (school administrators) to cover the hard and very hard items. The data from these items formed an interval-level scale from which valid inferences could be drawn.

The data analysis showed that there were thirteen items for the Actual School Improvements Items that needed to be reworded to fit the measurement model. Table 13.2 shows how these non-fitting items may be re-worded and made available for a future study on actual school improvement due to formal school registration.

Table 13.2 Thirteen non-fitting items for School Administrators Beliefs That Expected School Improvements Would Occur Due to Formal School Registration

No.	Item Wording
2.	The School Council meeting proceedings is expected to improve.
3.	The School Council's selection and appraisal of management staff is expected to improve.
17.	The school's financial risk management and analysis expected to improve.
21.	The daily attendance of students at school expected is to improve.
23.	The school's handling of truancy situations expected is to improve.
26.	Parental support of attendance policies and procedures is expected to improve.
37.	The student recruitment policy and procedures are expected to improve.
39.	The student retention rate and tracking system is expected to improve.
50.	A reduction in the disruptions at school is expected to improve.
82.	The policy and procedures for student testing is expected to improve.
96.	The behaviour management of students is expected to improve.
101.	A reduction in registered complaints is expected to improve.
103.	The disputes and complaints procedures are expected to improve.

Research Question 3

Are there inter-relationships between and amongst the twelve criteria used during formal school registration, such as between: School Governance (Criterion 1) and School Staff (Criterion 6); Care for Students (Criterion 10) and Disputes & Complaints (Criterion 11)); and School Curriculum (Criterion 8) and Learning Outcomes (Criterion 9)?

This research question was considered in Chapters Eight (actual) and Nine (expected). The findings revealed that it was not possible to create Rasch linear measures for each of the twelve criteria, because of the small number of items (five) and small sample size (N=74). However, it was possible to create twelve Guttman Scales resulting in 144 (12 X 12) correlations, which were then used to calculate 66 zero-order, inter-correlations (Pearson Product-Moment Correlations) between the twelve criteria of formal school registration (see also Tables 8.3, 9.3). The zero-order inter-correlations

for actual school improvement ranged from a low positive value ($r=+0.249$, representing 6% common variance) to a moderately high positive value ($r=+0.749$, representing 56% common variance). The zero-order inter-correlations for expected school improvement ranged from a low positive value ($r=+0.245$, representing 6% common variance) to a moderately high positive correlation ($r=+0.769$, representing 59% common variance). Moderately high positive correlations were found to exist between School Governance (Criterion One) and School Staff (Criterion Six) (actual, $r=+0.749$, representing 56% common variance). Similarly the findings revealed a moderately high positive correlation between School Staff (Criterion Six) and Care for Students (Criterion Ten) (actual, $r=+0.726$, representing 53% common variance), and between School Staff and Disputes & Complaints (Criterion Eleven) (expected, $r=+0.737$, representing 54% common variance). Although these moderately high positive correlations are insufficient in determining a causal inference and it is beyond the research questions of this study to explain the possible reasons for a causal inference between criteria, it is possible that these variables are linked together by a third variable related to school improvement. However, when these findings are added to the qualitative data concerning research question seven, it may be conceivable that the unique character of many non-government schools, with a specific educational philosophy or religious ethos has influenced this positive correlation.

It should be noted that the findings on this research question revealed a consistently moderately low positive correlation between Instructional Time (Criterion Five) and the other eleven criteria, (e.g. Instructional Time and School Governance (Criterion One) (actual, $r=+0.249$, representing 6% common variance); Instructional Time and School Staff (Criterion Six) (actual, $r=+0.265$, representing 7% common variance). Although uncertain, the reason for such moderately low positive correlations

may be linked to another variable, perhaps related to the legislative constraints place on School Instructional Time. Since, it is the Minister of Education who pre-determines the prescribed time and thereby reducing the potential for School Administrators to realise actual school improvements in instructional time, due to a formal school registration process.

Research Question 4

Are the beliefs of School Administrators regarding school improvement due to formal school registration influenced by their personal and school circumstances, namely: (1) school location; (2) school size; (3) school type; (4) gender; (5) administrator seniority; (6) qualifications; and (7) age?

This research question was addressed through the analysis of both quantitative and qualitative data. Quantitative data analysed in Chapters Six and Seven showed the findings of two reliable linear scales regarding School Administrator's beliefs that actual and expectant school improvements were due to formal school registration. In addition, the cross-tabulations of twelve Guttman scales in Chapter Ten added to those findings. Lastly, the qualitative data found in Chapters Eleven and Twelve provided more insight to the influence of personal and school circumstances. These findings are considered in order.

Using Rasch Analysis

There was no statistically significant difference between the beliefs of male and female School Administrators, nor between the locations of their school (Metropolitan, Regional and Remote). However, in regards to school size (<100, <500, <1000, <2000) and school types (primary, middle, secondary and K-12 schools), there was a statistically significant difference. School Administrators at larger schools (<1000) had

significantly lower measures ($p=0.0007$) than those at smaller schools (<500), meaning, they were less likely to believe that actual school improvements were due to formal school registration (see also Figure 6.4). And, School Administrators at primary schools had significantly higher measures ($p=0.002$) than their counterparts at secondary/K-12 schools, meaning that they were more likely to believe that expected school improvements were due to formal school registration. Although there was no statistically significant difference between the beliefs of School Administrators at Metropolitan or Regional/Remote school locations, it should be added that the different probabilities regarding school location tended to mirror school size with smaller schools in remote areas and larger schools in the metropolitan areas. School Administrators located at regional schools were likely to be leading a smaller primary school.

Using Guttman Scale Analyses

Using the twelve Guttman Scales that were created to determine the inter-correlations amongst and between the twelve criteria of School Registration, eight two-way contingency tables (Tables 10.1 to 10.8) were constructed and they showed that the beliefs of School Administrators were seldom influenced by their personal circumstances. However, the analysis of data regarding School Size and Item 114 dealing with staff training on legal requirements, did highlight a statistical significance (Fisher's Exact Test value of 0.009, Contingency Coefficient value of 0.318, and $r=+0.008$). School Administrators at smaller schools were more likely to state that school improvements were due to the formal school registration process than those at larger schools.

Using Interview and Comments Data Analysis

The interview data analysis revealed a complex array of issues regarding the formal school registration process. School Administrators talked about the context variables, such as school size and location, and how those variables had affected the formal school registration experience. For example, four School Administrators described how an inability to access resources and support had adversely affected their school's registration application. They explained that the school's remote location and small size had caused the school registration to be a difficult process. School Administrators at smaller schools with fewer resources or less staff were more likely to comment that school improvements were due to formal school registration. The data revealed that school size had adversely influenced the beliefs of School Administrators regarding the relationship between school improvement and school registration. These School Administrators described feeling stressed, afraid and anxious during the formal school registration process. While, at the same time, School Administrators in both large and small schools talked about how the success of their school registration application had led to greater staff unity and how it had evoked a greater sense of accountability, personal pride and confidence. The data highlighted the complexity of personal circumstances in regards to the differing beliefs of School Administrators.

Research Question 5

Will the beliefs of School Administrators identify school improvements due to formal school registration that are very easy, moderately easy, hard and very hard?

This research question was addressed through the analysis of both quantitative and qualitative data. The findings of the quantitative data analysed in Chapters Six,

Seven, Eight and Nine, and the findings of qualitative data in Chapters Eleven and Twelve are given in order.

Using Rasch Analysis

A Rasch-Created linear unidimensional scale identified seventeen and seven school improvement items respectively as moderately hard and very hard to agree that Actual School Improvement was Due to Formal School Registration. The hardest school improvement item was, *a reduction in the complaints registered at school* (Item 102). School Administrators felt that the school improvement items from Criteria 8 and 11, School Curriculum and Levels of Care for Students, were either moderately or very hard items. Arranged in order of difficulty, Table 13.3 shows five moderately hard items to agree that school improvements were due to formal school registration.

Table 13.3 Five Moderately Hard Items of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration

Items	(Actual) Moderately Hard
6 The School Council's community and public relations.	+2.02
52 The skills and expertise of teaching and non-teaching staff.	+2.15
86 The school's expectations and standards for student learning.	+2.32
94 The procedures to ensure internet safety.	+2.49
110 The school's public relations on matters dealing with disputes and complaints	+2.82

In Table 13.4, five actual school improvement items were identified as very hard to agree that Actual School Improvements were Due to Formal School Registration.

Table 13.4 Five Very Hard Items of School Administrators' Beliefs That Actual School Improvements Were Due to Formal School Registration

Items	(Actual) Very Hard
108 Parent satisfaction with the school disputes and complaints procedures.	+2.94
14 The expertise and qualifications of the school's financial management staff.	+3.00
48 The school's extra-curricular events supporting instructional times.	+3.24
68 The number of classrooms and learning spaces at school.	+3.33
102 A reduction in the complaints registered at school.	+4.02

As with the Actual School Improvement items, School Administrators did not expect the school improvement to occur as a result of items regarding School Financial Viability (Criterion 2) because of the formal school registration process. There was strong agreement about the two perspectives (Actual and Expectant) regarding school improvements that were due to formal school registration.

Table 13.5 Five Moderately Hard Items of School Administrators' Beliefs That Expected School Improvements Were Due to Formal School Registration
Items (Expected) Moderately Hard

5	The School Council's community and public relations.	+1.67
51	The skills and expertise of teaching and non-teaching staff.	+2.22
85	The school's expectations and standards for student learning.	+2.28
93	The procedures to ensure internet safety.	+1.79
87	The school's learning program for talented and gifted students.	+2.27

Tables 13.5 & 13.6 reveal the moderately hard and very hard school improvements items that School Administrators expected were due to school registration. Thirteen school improvement items were identified as very hard to agree that Expected School Improvements were Due to Formal School Registration.

Table 13.6 Five Very Hard Items of School Administrators' Beliefs That Expected School Improvements Were Due to Formal School Registration
Items (Expected) Very Hard

109	Parent satisfaction with the school disputes and complaints procedures.	+2.38
13	The expertise and qualifications of the school's financial management staff.	+2.40
47	The school's extra-curricular events supporting instructional times.	+3.13
67	The number of classrooms and learning spaces at school.	+3.70
69	The school's welcome and receptiveness to parents and visitors.	+3.70

Using Guttman Scale Analyses

The Guttman Scale analyses in Chapters Eight and Nine showed an item difficulty order that was consistent with the Rasch-Created linear scale regarding those school improvements considered to be moderately hard or very hard. As indicated in the Rasch-Created Scale, the Guttman Scale identified *'the expertise and qualification*

of the school's financial management staff' (Item 14) as a very hard school improvement item (see Table 13.7). There was strong agreement between the order of difficulty for the Actual School Improvements and the order of difficulty for the Expected School Improvements.

Table 13.7 A Guttman Scale Order For Five Items of School Administrators' Beliefs That Actual School Improvements in School Financial Viability (Criterion 2) Were Due to School Registration

Items	(Easy to Hard)
12 The standard and quality of the school's financial management.	121
18 The school's financial risk assessment and analysis.	121
16 The school's long term financial planning process and results.	119
20 The school's final (or end of year) income and expenditure position.	105
14 The expertise and qualifications of the school's financial management staff.	99

Using Interview and Comments Data Analysis

The interview data analysis showed that School Administrators had a diverse range of beliefs and opinions regarding the degree of ease or difficulty that they experienced to comply with the criteria used in formal school registration. While one School Administrators shared that formal school registration had been an enjoyable experience, another commented that the compliance measures set by formal school registration were too high. During eight of the one on one interview discussions, School Administrators mentioned the demands of School Curriculum (Criterion Eight). Only one School Administrator complained about the requirements to comply with the School Finance criterion. In general, all of the School Administrators spoke about a commitment to the Care of Students, noting it an important criterion to satisfy. Similarly, although data revealed that eleven School Administrators had needed to increase the school's instructional time to comply with the formal school registration, none considered this Criterion to be a difficult challenge.

Research Question 6

Can non-linear Guttman scales be created for each of the twelve criterion of formal school registration and are these consistent with the Rasch-created linear measures?

The findings in Chapters Eight and Nine revealed that it was possible to create twelve Guttman Scale Measures for Actual and Expected School Improvements due to Formal School Registration. Although the response patterns on these scale measures were not in perfect step-type arrangement, they were very acceptable (see also Table 8.1 & 8.2). There were no discrepancies between the actual and expected Guttman Scale non-linear scores. Both provided strong evidence of a unidimensional scale for each of the twelve criteria.

The findings point to good agreement between the Guttman Scale scores and the Rasch Measurement Model regarding the order of difficulty for the items related to the Actual and Expected School Improvements Due to Formal School Registration. For example, both measures listed item 6, *the Actual School Council's community and public relations*, as the hardest School Governance school improvement items. Likewise, both measures listed item 13, *the Expected Expertise and Qualifications of the School's Financial Management Staff*, as the hardest School Finance school improvement item.

Research Question 7

What beliefs do School Administrators have regarding school improvement and formal school registration, that are not addressed by the twelve formal registration criteria?

This research question was addressed in Chapters Eleven and Twelve. Comments made by School Administrators, both positive as well as negative, highlighted a number of beliefs surrounding the formal school registration process.

During the semi-structured, one on one interviews, School Administrators spoke freely about their experiences and emotions during the new formal school registration process. One School Administrator mentioned it had been the first time that anyone had asked questions about the formal school registration process. School Administrators described their stresses and joys. Some saying that it had been easy process, while others remained anxious about their school registration application. Four key issues were apparent in regards to the school registration process, namely that: (1) the time required to comply with demands of formal school registration was significant, School Administrators struggled to balance their workload; (2) School Curriculum (Criterion Eight) and the Care for Students (Criterion Ten) should remain an essential criteria used during the formal school registration process; (3) recognition and acknowledgement by the School Registration Officers of the school's context and culture is essential during the school registration process; and (4) a heavy reliance student test results in assessing the standards of Student Learning Outcomes (Criterion Nine) is questionable in Steiner schools where the importance of learning through play is emphasized.

School Administrators expressed their opinions regarding possible improvements to the formal school registration process, these included the following five suggestions; (1) feedback given to School Administrators should be more frequent and timely; (2) the introduction of interview-skills training to assist the School Registration Officers; (3) the need for the Registration Panels to stay longer and show greater interest during their visit to the school; (4) a reduction in the number of registration criteria reviewed at any one time; and (5) provide School Administrators with greater control of the registration process through the introduction of an internal review option for some criteria. The data showed that there is a need for the on-going development and refinement of the formal school registration process.

Discussion of the Study

In response to the ‘so what’ question of this study; so what does it mean? It is first important to note, as outlined in Chapter Two, *Literature Review*, a significant absence of scientific and empirical research on the effects of school registration (Dedering & Muller, 2010; Ehren, et al., 2012). To date, most researchers investigating the relationship between school improvement and school registration have relied heavily on a mixed research method of case studies, interviews, Likert Scale and other rating scales. And, as indicated in Chapter Four, *Measurement*, research based in the True Score Theory of measurement, does not include a reliable and accurate measurement technique capable of highlighting the relationship between the observable responses to a questionnaire item and the unobservable traits assumed to underlie the items on a questionnaire. In contrast, the Rasch measurement models in this study did indicate what school improvements, derived from the school registration items of the twelve criteria, were or were not measureable on a linear scale (see also Table 6.6). The data successfully fit a Rasch measurement model, which had sample-free school registration item difficulty measures and scale-free School Administrator measures that were mathematically calculated to a linear scale with standard units. The resultant interval data (See also Table 6.5, 7.5) shown to fit the Rasch measurement model were verified as reliable and can be used to form valid inferences. This is a significant result achieved in this study and confirms the statement that there is indeed a relationship between school improvements and a new formal school registration process. It presents new knowledge and represents a first-ever objective measurement of School Administrators’ beliefs regarding the relationship between school improvements and formal school registration. In essence, this study has made a unique contribution to the scientific and empirical research on the effects of school registration.

Second, the new knowledge, generated in this study through the Rasch measures and Guttman scales, is informative and useful. For example, the Guttman Scale for School Governance (Criterion One) lists five school registration items from easiest to hardest to improve. However, it also gives the school registration item scores of School Administrators from lowest to highest. Hence, the Guttman scale shows whether school improvements have occurred on these items according to the School Administrators. Thus it can be determined which schools have improved on which school registration items and subsequently where further school improvements can be targeted in meeting the requirements of School Governance Criterion. For example, Table 8.1 revealed that most School Administrators found it difficult to improve the School Council's community and public relations (Item 6). This is important information for School Registration Officers to check when a school registration application is submitted. It would also be important information to be given as feedback to the School Administrators within the official School Registration Report.

In the same manner, the Rasch-created linear scale is very useful for School Registration Officers and the Department of Education Services. The Rasch-created linear measure, which lists the 48 (actual) school registration items where school improvement occurred from easiest to hardest, also shows the School Administrator measures from lowest to highest. Thus it can be determined which schools have improved on which items and point to school registration items where improvements did not occur or perhaps should occur. The Rasch-created linear scale agreed with the Guttman scale and considered school improvement in the School Council's community and public relations to be hard to achieve. This is important information for School Registration Officers to read in preparation for their school registration audit and visit. Essentially, this information, gained via an objective measurement, focuses the attention

of both School Administrators and School Registration Officers on those school registration items which will more likely lead to school improvement.

Third, in this study, although the criteria used during formal school registration are considered by the Department of Education Services to be equally important (see also Chapter Three, pp.57,58), the Rasch-created linear scale of School Administrator beliefs regarding (actual and expectant) school improvements due to formal school registration, show that some criteria were likely to be considered more important than others. Both Rasch measures and the Guttman scales highlighted similar differences between the twelve criteria. For example, the Rasch-created scale showed that school improvements on school registration items taken from Legal Compliance (Criterion Twelve) were all considered to be either easy or very easy to achieve. On the other hand, all of the school registration items taken from School Finance (Criterion Two) were considered to be hard or very hard. While the reasons for these differences were not part of this study, this information is helpful to both School Administrators and School Registration Officers in determining the more important school registration items requiring attention.

Different levels of importance between criteria also appeared in the data analysis of Guttman measures. For example, the zero-order inter-correlations of the Guttman scores (see also Tables 8.3 to 8.7) showed moderately high positive correlations between School Governance (Criterion One) and School Staff (Criterion Six), and yet, very low correlations between School Instructional Time (Criterion Five) and all of the other criteria. In addition to this, there was also a heightened correlation between School Curriculum (Criterion Eight) and Student Learning Outcomes (Criterion Nine). School Administrators appear to consider these criteria to be more important than

others. Interestingly, this quantitative data analysis was also confirmed by the comments of, and during interviews with, School Administrators, and also informally in a discussion with Department of Education Services (see also Chapter Two, pg.28). School Administrators opinionated that School Curriculum (Criterion Eight) should feature heavily within the formal school registration process. They expressed very little concern regarding the school registration items taken from School Finance (Criterion Two). Informally, the Department of Education Services expressed concerns regarding safety of all students, as recognised in the Care of Students (Criterion 10). This information, too, is valuable knowledge for School Administrators as they prepare to submit their formal school registration application. It is also important information for the Department of Education Service, as it fine-tunes the criteria used during the formal school registration process. Likewise, this information will help School Registration Officers to focus their attention on, and to better understand, those criteria which are deemed to be more important by School Administrators.

Fourth, this discussion highlights the quantitative and qualitative data analysis of three contextual variables, namely, school size, school type and school location. Whereas the Government of Western Australian introduced the formal school registration process as a 'one-size-fits-all' compliance measure, this study suggests that the context variables of school size, school type and possibly school location may need to be recognised, since they significantly do influence the beliefs of Schools Administrators. For example, the Rasch-created linear scale measurement regarding (actual) school improvements due to formal school registration (see also pg. 124), revealed that School Administrators at smaller schools have statistically significant higher measures than those at larger schools ($p=0.0007$). This means that School Administrators at smaller school will be more likely to experience greater school

improvement due to formal school registration than their colleagues at larger schools. A similar Rasch-created linear scale measurement, regarding (expectant) school improvements due to formal school registration (see also pg. 148), showed that School Administrators at primary schools were more likely to expect school improvements due to formal school registration ($p=0.002$). Interestingly, although not shown to be statistically significant, the data analysis also revealed that school location is related to school size and type. Hence, School Administrators located at regional schools were more likely to experience school improvements due to formal school registration than those at larger urban centred schools.

This point was also highlighted through the cross-tabulation of Guttman scores regarding the influence of school size and type on the beliefs of School Administrators (see Chapter 10, pg. 205). For example, approximately 19.6% of the School Administrators at smaller schools held the belief that school improvements regarding school staff were linked to the formal school registration process, while only 5.9% of School Administrators at larger schools shared that opinion (see Table 10.3). Further, this difference of beliefs between School Administrators at smaller primary and larger non-primary schools was also confirmed through the written comments and interviews with School Administrators. The School Administrators located at smaller primary schools were more likely to suggest that formal school registration had contributed to school improvements. At the same time, these School Administrators also describe a lack of available resources and personnel to deal with the demands of formal school registration. They were more likely to express frustration and anxiety in regards to the demands of formal school registration (see Chapter Eleven, pg. 211). In pulling together the qualitative and quantitative data analysis, this is new information which should not be ignored. It suggests that the reasons for the difference in beliefs should be

explored. It suggests that the formal school registration process should include a number of provisions to compensate for the needs of School Administrators located at smaller primary regional schools. This new information highlights possible improvements for the formal school registration process.

Fifth, in this study, the qualitative data analysis revealed a significant context variable that has influenced the beliefs of School Administrators, namely, School Culture. Although this variable was not included within the quantitative data analysis, reference to its influence was highlighted through the research of Thrupp and Burgham (see Chapter Two, pg. 36). Likewise, the data analysis of written comments by and interviews with School Administrators showed that, in situations where the formal school registration process had ignored the school's culture, School Administrators were likely to question and minimize the relationship between school improvements and school registration. These School Administrators were more likely to be negative in their opinions about formal school registration, even though they also acknowledged that some school improvement had occurred due to the formal school registration process. One example of this was evident in Steiner schools, where the school culture places an emphasis on 'learning through play'. However, because the formal school registration process had relied heavily on student test results to assess Student Learning Outcomes (Criterion Nine), there was a sense of resistance to school improvements connected to formal school registration. In essence, the School Administrators in Steiner school may well believe in the presence of a conflict between school improvements and the formal school registrations process.

In another example, the influence of school culture in regards to the beliefs of School Administrators was evident through the comments and interviews with School

Administrators at remote Indigenous Community Schools. In these schools there was a strong community governance model which emphasised the community's involvement in School Governance. However, because the formal school registration process had relied heavily on a top-down style of leadership and governance, School Administrators in Indigenous Community Schools might question the demands of school registration items linked to School Governance (Criterion One). These findings suggest that school culture should be included as a key element of the formal school registration process. This is information helpful to the relationship between school improvement and formal school registration.

To conclude, this study has shown that School Administrators do believe that there is a positive relationship between school improvement and a new formal school registration process. However, through the findings of a multi-quantitative data analysis, it has described that relationship by creating a new Rasch-created linear scale to measure the beliefs of School Administrators. By providing a more reliable objective unit of measurement, than previously available through research based in the Total Score Theory of measurement, it has highlighted several statistically significant aspects of the relationship between school improvements and formal school registration. None-the-least, this study has given a voice to the beliefs of School Administrators and highlighted a concern regarding School Administrators at small primary schools, many of which are located in regional or remote areas. The study has provided School Administrators, the Government of Western Australia, the Department of Education Services and its Registration Officers with new information regarding the formal school registration of non-government schools. This leads to the question; what's next? What are the implications of these finding?

Implications

Implications for School Administrators

Since 2004, it is the School Administrators of non-government schools in Western Australia, who must submit a formal school registration application for their schools. It is they who need to know well the requirements of the twelve criteria used during the formal school registration process. They should equip themselves with new information regarding what are the very easy, moderately easy, moderately hard and very hard school registration items, as identified through a new Rasch-created linear scale. By doing so, they will not only be able to assess the criteria of formal school registration and which school improvement items they need and are able to achieve, they will also be better enabled to target their school's limited resources. As suggested by Geijsel, Slegers, Leithwood and Jantzi (2003), and Gunter et al.(2001), the informed decisions of school leaders are an essential element of school improvement. School Administrators will need to effectively develop their own skills, as well as the profession development of all teaching and non-teaching staff. And, as highlighted by Cavanagh (2003), Bryant (2003) and Strickland, (2003), the decisions by School Administrators (Principals) should be based within a commitment to use the school resources for the purposes of school improvement. This study provides a reliable linear scale of school improvement measures to direct School Administrator decisions. School Administrators need not wonder about the relevance of school improvements related to the criteria in the formal school registration process. For example, School Administrators with no school improvements in Legal Compliance (Criterion Twelve) will want to address this, as this study has shown it to be an easy or very easy school improvement related to formal school registration. However, it has also pointed out,

that the findings of this study encourage School Administrators to be aware of their own school culture during the formal school registration process. It is possible that the criteria of formal school registration may conflict with a school's culture or recognised ways of doing things. This is also in line with studies by Fullan (2003) and Hargreaves, Lieberman, Fullan, Hopkins, et al., (2005) pointing out the importance of school culture.

Implications for Registration Officers

The findings suggest that there is a responsibility on the Registration Officers to take the initiative in making some changes within the formal school registration process and to lend greater support to School Administrators who are trying to meet the requirements of the twelve criteria. This is in line with other recent research highlighting the important role played by Registration Officers during school visits. (Ehren & Visscher, 2006; Bryant, 2003; Kogan, Cullingford, & Maden , 1999). By means of the Rasch created linear measure, which lists the 48 school registration items where school improvement occurred from easiest to hardest, Registration Officers can determine which school items will be easy or hard to improve and which school improvements might or might not be necessary. This is important information for the Registration Officers in preparing their feedback Reports to the schools and also for Registration Officers to read in preparation for their next school registration visit.

Further, this study suggests that Registration Officers should cultivate a school registration process which stimulates a sense of collaboration and cooperation between the parties involved. The stress could be reduced during and before the school registration process, as suggested by Brimblecombe, Ormston and Shaw (1995). And, as pointed out by the School Administrators in this study, although the formal school registration process does contribute to school improvement, Registration Officers could

be more familiar with a school, make more time available to the school, provide more frequent and timely feedback and recognise the unique circumstance present in many non-government schools. School Registration Officers play an important role within the formal school registration process, since it is their assessment of a school which will guide the Minister of Education's consideration of a formal school registration application.

Implications for the Department of Education Services

The findings in this study suggest that the Department of Education Services should fine-tune the formal school registration process. And, by using the newly created Guttman Scales and Rasch linear scale measure presented in this study, the Department of Education Services is able to review each of the twelve criteria of formal school registration. For example, they will be able to review school improvements in relation to the very easy, moderately easy, moderately hard and very hard school registration items. In particular, the Department of Education Services may want to reconsider the levels of importance attributed to various criteria used during formal school registration. In addition, they may wish to ask; Why do School Administrators believe that a heavy emphasis should be placed on School Curriculum (Criterion Eight)? And; Is it possible to make certain provisions, within the formal school registration process, to address the issues surrounding differences between small primary schools and their larger urban centred counterparts?

Based on the Rasch-created linear scale presented in this study, The Department of Education Services may want to move away from the current 'tick-the-box' assessment process of criteria to a measurement of school improvement. In essence, through the use of an objective linear scale measurement, the ability to track school

improvement might prove more beneficial in meeting the criteria of formal school registration. In the absence of any previous scientific or empirical research data, the Government of Western Australia and its Department of Education Services may want to investigate the application of this newly Rasch-created linear scale of School Administrators beliefs.

Implications for Future Research

Expanding the interest in this present study, as experienced through a presentation by this researcher during the Pacific Rim Objective Measurement Symposium in August 2012, (Witten, Waugh, Gray, 2012a), creates new opportunities to explore the measurement of School Administrator beliefs in the area of school registration and improvement. It's exciting to create something new and make an application for its benefits within other educational jurisdictions or school sectors. And, in an increasing environment of accountability (Abelmann & Elmore, 1999; and Earl & LeMahieu, 1997), this research provides new opportunities. The Government's Department of Education and other school sectors, such as the Catholic Education Office in Western Australia, may want to compare and assess those school improvements believed to be very easy or very hard and through the innovative research of this study, that is now possible.

This is new research that may serve to model a mixed quantitative and qualitative data analysis and stimulate new investigations into other criteria linking school improvements to formal school registration. For example, it may be interesting to examine a new context variable, such as the social-economic status of students within schools that are trying to meet the criteria of formal school registration (see also Thrupp, pg. 36). Future research regarding school improvement and formal school

registration may be strengthened by the analysis of data gathered from all of the major stakeholders, namely the teachers, students and parents of non-government schools. The complexity of relationships within the formal school registration process requires the objectivity of a linear scale measurement; this study has introduced that reality and suggests further research to benefit schools.

CONCLUSION

To conclude, the present study contributes new knowledge to the body of information about the relationship between school improvement and formal school registration, as it is expressed by the beliefs of School Administrators in the non-government schools of Western Australia. It's an important and complex issue which demands careful and objective research. The findings in this study have provided a taste of such research possibilities, while contributing worthwhile information for the School Administrators at non-government schools and the Department of Education Services in Western Australia. And, just as the non-government schools in Western Australia are all different, this study presents the beliefs of School Administrators who have recognised the different school improvement items found within the twelve criteria of formal school registration.

It is good to know that there is a relationship between school improvement and formal school registration and that this study has effectively gained that knowledge to explore the possible benefits of that relationship. School Administrators and the Department of Education Services need to support their schools through informed decision-making and are urged to apply new information when targeting the resources needed for school improvement. The response of School Administrators to a new

formal school registration process for non-government schools is an important opportunity for school improvement.

This study has developed a new unidimensional linear scale relating to School Administrators' beliefs regarding school improvement and a new formal school registration process. The more that is known, about the relationship between school improvement and formal school registration, the greater the potential to apply this knowledge for the benefit of those students currently enrolled in the non-government schools of Western Australia. Without any previous research regarding the formal registration process of non-government schools in Western Australia, since its official introduction in 2004, this present study was needed and is very timely.

References

- Abelmann, C. & Elmore, R. (1999). *When accountability knocks, will anyone answer?* University of Pennsylvania, Retrieve March 3rd, 2011, from <http://www.cpre.org/Publications/rr46.pdf>.
- ACARA, (Australian Curriculum Assessment and Reporting Authority) (2010). The Australian Curriculum, Retrieved September 3rd 2011 from <http://www.acara.edu.au> .
- Ainscow, M. (2003). David Hopkins, School Improvement for Real (Education and Change Development). *Journal of Educational Change*, 4(2), 200-204.
- AISWA, (Association of Independent Schools of Western Australia) (2010). Membership Website, Retrieved March 3, 2010, from <http://ais.wa.edu.au/> .
- Akbaba, A. (2011). Case of administrative inspection in primary education institutions. *African Journal of Business Management*, 6(30), 8964-8977.
- Albones, R. (2005). *School accountability 2005-2007: School improvement through self-assessment and school review: Proceedings of the Midwest district principals' conference, Western Australia*. Geraldton: Department of Education and Training.
- Alexander, R. (2010). Cambridge Primary Review, Uk: Cambridge University, Retrieved March 4th, 2010, from <http://www.primaryreview.org.uk/> .
- Andrich, D. A. (1978). A binomical latent trait model for the study of Likert-Style attitude questionnaires. *British Journal of Mathematical and Statistical Psychology*, 31(1), 84-98.
- Andrich, D. A. (1985). *An elaboration of Guttman scaling with Rasch models for measurements*. San Francisco, CA: Lossey-Bass Publishers.
- Andrich, D. A. (1988b). Rasch models for measurement. . *Sage university paper on quantitative applications in the social sciences, Series numbers 07/068*. Newbury Park, CA: Sage Publications.
- Andrich, D. A. (1989). Distinctions between assumptions and requirements in measurement in the social sciences. In J.A. Keats, R. Taft, R.A. Heath and S.H. Lovibond (Eds.) *Mathematical Systems* . (pp.7-16), North Holland: Elsevier Science.
- Andrich, D. A. (1998a). A General Form of Rasch's Extended Logistic Model for Partial Credit Scoring. *Applied Measurement in Education*, 1(4), 363-378.
- Andrich, D. A., Sheridan, B.E. & Luo. G. (2000). *RUMM: A windows-based item analysis program employing Rasch unidimensional measurement models*. Perth: Murdoch University.

- Andrich, D. A., & Luo, G. (2003). Conditional pairwise estimation in the Rasch model for ordered response categories using principal components. *Journal of Applied Measurement*, 4(3), 205-221.
- Andrich, D. A. (2009). *Review of the Curriculum Framework for curriculum, assessment and reporting purposes in Western Australian schools, with particular reference to years Kindergarten to Year 10*. Perth: Retrieved May 20, 2011, from www.det.wa.gov.au.
- Andrich, D. A., Sheridan, B.E. & Luo, G. (2010). RUMM2030: A windows-based item analysis program employing Rasch unidimensional measurement models. Perth, WA: RUMM Laboratory.
- Au, W. A., & Michael W. (2010). Reviewing policy: Testing, accountability and the politics of education *Educational Policy*, 24(2), (10.).
- Austen, S. R. (2007). *The policies and procedures for governance and administration that non-government schools in Queensland could use to achieve and maintain accreditation under the Education (Accreditation of Non-State Schools) Act 2001*. Brisbane QL.
- Australia Independent Schools Association. (2003). Accountabilities of Independent Schools, Retrieved March 3, 2010, from <http://www.ais.edu.au> .
- Baker, E. & Linn, D. (2004). *Validity issues for accountability systems* Columbia: Teachers College Press.
- Ball, S. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18, 215-228.
- Barber, M. (2004). The virtue of accountability: System redesign, inspection, and incentives in the era of informed professionalism. *Journal of Education Policy*, 185, 7-38.
- Barnett, C. (1997). *Review of the Education Act 1928: Proposal for New Legislation*. Perth.
- Bell, J. (2005). *Doing Your Research Project: A Guide for First-time Researchers in Education, Health and Social Sciences*. Maidenhead: Open University Press.
- Bergman, M. M. (2008). *Advances in Mixed-Method Research: Theories and Applications*: Thousand Oaks, CA: Sage Publications.
- Berka, K. (1983). *Measurement: its concepts, theories, and problems*. Boston: Kluwer Academic Publishers.
- Bernasconi, A. (2004). Current trends in the accreditation of K-12 schools: Cases in the United States, Australia and Canada. *Journal of Education* 185(3), 73-82.

- Blok, H., Slegers, P. & Karsten, S. (2008). Looking for a balance between internal and external evaluation of school quality: evaluation of the SVI model. *Journal of Educational Policy*, 23(4), 379-395.
- Boyd, H. H. (2002). How to get a respectable response rate. Retrieved November 10, 2011, from <http://www.uwex.edu/ces/pdonde/resources/quicktipsnumerical.html>
- Brauckmann, S., & Pashiardis, P. (2010). The clash of evaluations: In search of the missing link between school accountability and school improvement – experiences from Cyprus. *International Journal of Educational Management*, 24(4), 330-350.
- Brimblecombe, N., Ormston, M., & Shaw, M. (1995). Teacher's perceptions of school inspection: A stressful experience. *Cambridge Journal of Education*, 25, 53-61.
- Brunsdon, V., Davies, M., & Shevlin, M. (2006). Anxiety and stress in educational professionals in relation to Ofsted. *Education Today*, 56, 24-31.
- Bryant, D. J. (2003). *Western Australian principals' theorising on 'good schools': An interpretist study* University of Western Australia.
- Burgham, S. (2000). Parents and 'good' school obsessions, *New Zealand Herald*.
- Burke, S., & Collins, M.K. (2001). Gender Differences in leadership styles and management skills 16, 5(244-257).
- Burns, R. B. (1994). *Introduction to Research Methods*. Melbourne: Longman Cheshire Pty Ltd.
- Burris, R. T. (2008). *An analysis of accreditation processes, quality control criteria, historical events, and student performance*. Unpublished EdD dissertation, University of Central Florida, Florida.
- Campbell, G. (1998). *The critical evaluation of school registration Procedures in two Catholic schools in the Archdiocese of Canberra and Goulburn*. Unpublished doctoral dissertation, University of South Australia, SA.
- Caracelli, V. J., & Greene, J.C. (1997). *Crafting mixed-method evaluation designs*. San Francisco: Jossey-Bass.
- Carnoy, M. E., R. & Sishin, L.S. (2003). *The new accountability: High schools and high stakes testing*: New York: Routledge Falmer.
- Cavanagh, R.F., MacNeill, N. & Silcox, S. (2003), Pedagogic Principal Leadership, *Management in Education*, Vol. 17, No.4, pp.14-17.
- Cavanagh, R. F., Reynolds, P. S., MacNeill, N. & Romanoski, J. T. (2004). *Development of a Rasch model scale to measure teacher observations of how principals lead the school pedagogy*. Paper presented at the 2004 Annual Meeting of the Australian Association for Research in Education: Melbourne.

- Chapman, C. (2001). Changing classrooms through inspections. *School Leadership & Management*, 21, 59-73.
- Chapman, C. (2001). Unlocking the potential: inspection as a mechanism for school improvement. *Improving Schools*, 4(3), 41-50.
- Chapman, E. S. (2006). True score *In Neil J. Salkind (Ed), Encyclopedia of Measurement and Statistics Vol. 1* (pp. 421-423): Thousand Oaks, CA: Sage Publication.
- Chester, M. D. (2005). Making valid and consistent inferences about school effectiveness from multiple measures. *Educational Measurement: Issues and Practices*, 24(4), 40-52.
- Chitty, C. (2004). *Education Policy in Britain*. Basingstoke: Palgrave Macmillan.
- Choi, C. I. (2006). *A study of variable influencing the results of high school evaluation and teachers' attitudes toward the evaluation in Korea* Minnesota: University of Minnesota.
- Choy, S. (1998). Public vs Private Schools. *Principal*, 77, pp. 25-29.
- Christine, G. (2009). School inspections have no secret agenda. *The Times Educational Supplement : TES*(4870), 23.
- Chapman, C. (2002). Ofsted and school improvement: Teachers' perceptions of the inspection process in schools facing challenging circumstances. *School Leadership & Management*, 22(3), 257.
- Clark, V. P. C., VLP (2008). *The mixed methods reader*. Thousand Oaks, CA: Sage Publications.
- Clift, P. S., Nuttall, D.L. & McCormick, R. . (1987). *Studies in school self-evaluation*. London: Falmer Press.
- Colin, R. (2012). Ofsted Inspection Inspected: An Examination of the 2012 Framework for School Inspection and Its Accompanying Evaluation Schedule. *FORUM: for promoting 3-19 comprehensive education*, 54(2), 247-272.
- Constable, E. (2010). *Minister of Education: Address delivered to the Council Meeting of the Association of Independent School in Western Australia, 4th November 2010*, Perth.
- Cooper, B. S. F., Bonnie, D. . (2009). *The rising state: How state power is transforming our nations schools*. New York: SUNY Press - State University of New York.
- Cresswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches (2nd ed)*. Thousand Oaks, CA: Sage.

- Creswell, J. W., & Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.
- Creswell, J. W., & Clark, V. L. (2010). *Designing and conducting mixed methods research (2nd Ed.)*: Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. , Clark, V. L., Gutmann, M.L, & Hanson, W.E. (2003). *Advanced mixed methods research designs*. Thousand Oaks, CA: Sage.
- Creswell, J. W. & Plano Clark, V. L. (2007). *Designing and conducting mixed mehtods research*. Thousand Oaks: Sage.
- Cronback, L. J. (1951). *Coefficient alpha and the internal structure of tests*, *Psychometrika*, 16, 297-334.
- Cronbach, L. J., & Shavelson, R. J. . (2004). My current thoughts on coefficient alpha and successor procedures. *Education and Psychological Measurement*, 64(3), 391-418.
- Crooks, T. J. (2002a). Educational Assessment in New Zealand schools *Assessment in Education*, 9, 237-253.
- Crooks, T. (2003). *Some Criteria for Intelligent Accountability* Paper presented at the American Research Association Chicago, Illinois.
- Crooks, T. (2009). New Zealand Accountability Model. Retrieved on March 15, 2011, from www.fairtest.org/new-zealand-accountability-model.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. St. Leonards, Australia: Allen & Unwin.
- Cruise, C. (2010). *A single case study of the quality enhancement plan component of the Southern Association of Colleges and School's accreditation process*. Florida: University of Central Florida.
- Curriculum Council of Western Australia. (1998). *The curriculum framework for kindergarten to year 12 education in Western Australia*. Osborne Park, Western Australia: author.
- Cusack, B. O. (1992). An End to School Inspection: The New Zealand Experience. *Management in Education*, 6(2), 6-8.
- Cuttance, P. (1995). An evaluation of quality management and quality assurance systems for schools, *Cambridge Journal of Education*, Vol. 25, 1, pp. 97-108.
- Cuttance, P., Harman, G., Macpherson, R.J.S., Pritchard, A., & Smart, D. (1998). The Politics of Accountability in Australian Education *Education Policy*, 12(1&2), pp.138-161.

- Czaja, R. B., J. . (2005). *Designing surveys: A guide to decisions and procedures (2nd Ed.)*. Thousand Oaks, CA., Pine Forge Press.
- D'Agostino, J. V., & Powers, S. J. (2009). Predicting Teacher Performance with Test Scores and Grade Point Average: A Meta-Analysis.(Author abstract)(Report). *American Educational Research Journal*, NA.
- Darling-Hammond, L. (2004). Standards, accountability and school reform. *Teachers College Record*, 106(6), 25-30.
- Darren, E. (2010). More than 30% of schools face re-inspection, says Estyn chief: News. *The Times Educational Supplement Cymru*(335), 4.
- David, M. (2010). Head of academy stands down before it opens after his old school is damned by Ofsted: News. *The Times Educational Supplement: TES*(4887), 25.
- David, P. (2007). Self-evaluation and Ofsted Inspection. *Educational Management Administration & Leadership*, 35(3), 373.
- Davies, H. (1965). *Culture and the Grammar School*. London: Routledge & Kegan Paul.
- Davies, J. D., Lee, J., Postlethwaite, K., Tarr, J., Thomas, G., & Yee, W. C. (1999). After inspection in special schools: action planning and making progress. *British Journal of Special Education*, 26(3), 130-130.
- Davies, S. (2004). School choice by default? Understanding the demand for private tutoring in Canada. *American Journal of Education*, 110(3), 233-255.
- Davis, S., Darling-Hammond, L., LaPointe M. & Meyerson D. (2005). *School leadership study: Developing successful principals*. Stanford, CA: : Stanford University, Stanford Educational Leadership Institute.
- De Grauwe, A. (2007). Transforming School Supervision into a Tool for Quality Improvement. *International Review of Education / Internationale Zeitschrift für Erziehungswissenschaft / Revue Internationale de l'Education*, 53(5/6), 709-714.
- De Groot, A. D. (1984). Quality of education and the evaluation paradigm. *Studies in Educational Evaluation*, 10, 235-250.
- De Wolf, I. F. & Janssens, F. J. G. (2007). Effects and side effects of inspections and accountability in education: An overview of empirical studies. *Oxford Review of Education*, 33, 379-396.
- Dedering, K., & Mullar, S.(2011). School improvement through inspections? First empirical insights from Germany. *Journal of Educational Change*, 12, 301-322.
- DeJong, W. S., & Craig, J. (2002). How Should Schools Be Organised? *School Planning & Management*, 41(6), 26-32.

- Dempster, N. (2000). Guilty or not: the impact and effects of site-based management on schools. *Journal of Educational Administration*, 38(1), 47-63.
- Denzin, N. K. & Lincoln, Y. S. (Eds.). (1994). *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications.
- Denzin, N. K. & Lincoln, Y. S. (1994). *Introduction: The Landscape of Qualitative Research*. Thousand Oaks, CA: Sage.
- Department of Education Services. (1997). *Education Act Review Project*. Perth: Retrieved on Nov. 10, 2011, from <http://www.des.gov.wa.au/offices/edreview/index2.html>.
- Department of Education Services. (1997). *Curriculum Council Act 1997*, Retrieved March 3, 2010 from www.det.wa.edu.au.
- Department of Education Services. (1997). *School Education Bill 1997: Second Reading Speech* Perth.
- Department of Education Services. (1998). *Student Outcome Statements Working Edition*: Perth.
- Department of Education Services. (2000). *Curriculum Framework*, Retrieved March 5, 2010, from www.curriculum.wa.edu.au.
- Department of Education of Western Australia, (2000). *School Accountability Framework*. Perth: Department of Education Western Australia.
- Department of Education Services. (2003). *Assessment, Monitoring and Reporting Policy*. Retrieved from <http://www.education.tas.gov.au/Nav/StrategicPolicy.asp?>.
- Department of Education and Training (Western Australia). (2008). *The school improvement and accountability framework*. Retrieved on March 23, 2010 from <http://www.det.wa.edu.au/education/accountability>.
- Department of Education Services. (2010). *Annual Report 2009-10* Perth.
- Department of Education Services. (2010). *Higher Education Services*, Retrieved Dec. 20, 2010, from www.des.wa.gov.au.
- Department of Education Services. (2010). *Non-Government Schools in Western Australia: Registration 2010*. Perth.
- Department of Education Services. (2010). *The requirements for the registration and funding of non-governments school are dealt with under Part 4 of the School Education Act 1999 and Part 9 of the School Education Regulations 2000*. Perth.

- Department of Education, U. (2011). *United Kingdom Education Act of 2002*. London, England: Retrieved on April 9th, 2011 from www.legislation.gov.uk.
- Dettman, P. K. (1988). *The Accreditation Model of Whole-School Evaluation in Australian Independent Schools*. Murdoch University, Perth.
- Dillman, D. A., Smyth, J., & Christian, L. (2009). *Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method (3rd Ed)*. Hoboken, NJ: John Wiley & Sons Inc.
- Dimaggio, P. J., & Powell, W.W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields *American Sociological Review*, 48(1), 147-160.
- Dorothy, L. (2008). Annual checks for schools not improving fast enough. *The Times Educational Supplement : TES*(4775), 12.
- Dowling, A. (2008). Policy Analysis and Program Evaluation: Output Measuring in Education. Retrieved July 11, 2010, from www.research.acer.edu.au/policy_analysis_misc/ .
- DuBois, B. & Burns, J. A. (1975). An analysis of the meaning of the question mark response category in attitudinal scales. *Educational and Psychological Measurement* 35, 869-884.
- Duggan, M. (2009). *School Accountability in the Western Australian public school sector: perceptions of leaders in the field*. Murdoch University, Perth, Western Australia.
- Earl, L., & LeMahieu, P.G. (1997) Rethinking assessment and accountability, *Association for Supervision and Curriculum: Yearbook*: Alexandria, USA, pp. 149-169.
- Earl, L. T., Nancy. (2000). Instructional program coherence: What it is and why it should guide school improvement policy. *Peabody Journal of Education*, 75(4), 33-45.
- Earl, L. (2005). Accounting to accountability: Harnessing data for school improvement. 6-10. Retrieved from <http://www.acer.edu.au/work/documents/Earl.pdf> .
- Earley, P. (1998). *School improvement after inspection? School and LEA responses*. London:: Sage.
- Education Review Office. (2012). School Charter Handbook, Retrieved on March 2nd, 2012, from www.ero.govt.nz.
- Ehren, M. C. M., Leeuw, F.L. & Scheerens, J. (2005). On the impact of the Dutch Educational Supervision Act: Analyzing assumptions concerning the inspection of primary education. *American Journal of Evaluation*, 26, 60-67.

- Ehren, M. C. M., & Swanborn, M.S.L. (2012). Strategic data use of schools in accountability systems. *School effectiveness and school improvement*, 23(2), 257-280.
- Ehren, M. C. M., Altrichter, H., McNamara, G., & O'Hara, J. (2013). Impact of school inspections on improvement of schools - describing assumptions on causal mechanisms in six European countries. *Education Assessment and Evaluation Accountability* 25, 3-43.
- Ehren, M. C. M., & Visscher, A. J. (2006). Towards a theory on the impact of school inspections. [Article]. *British Journal of Educational Studies*, 54(1), 51-72.
- Ehren, M. C. M., & Visscher, A. J. (2008). The relationships between school inspections, school characteristics and school improvement. [Article]. *British Journal of Educational Studies*, 56(2), 205-227.
- Elmore, R. C. (2002). Bridging the gap between standards and achievement: The imperative for professional development in education [Electronic version], from http://www.ashankerinst.org/Downloads/Bridging_Gap.pdf.
- Elmore, R. C. (2003). *The new accountability high schools and high-stakes testing*: New York: Routledge Falmer.
- Elmore, R. C. & Fuhrman, S. H. (2004). Conclusion: The problem of stakes in performance-based accountability systems. In R. C. Elmore, & S.H. Fuhrman (Ed.), *Redesigning accountability systems for education* (pp. 274-296). New York: NY: Teachers College Press.
- Elmore, R. C. (2005). Accountable leadership essays. *The Educational Forum*, 69(2), 8-22.
- ERO. (2012). Education Review Office: 2012 Annual Report, from www.ero.govt.nz/about-us/annual-report.
- Eurydice. (2004). Evaluation of schools providing compulsory education in Europe Retrieved January 2011, from <http://www.eurydice.org/portal/page/portal/Eurydice>.
- Eurydice. (2007). *School autonomy in Europe: policies and measures*. Brussels: Eurydice.
- Eurydice. (2010). Gender Differences in Educational Outcomes: Study on the Measures Taken and the Current Situation in Europe Retrieved from http://eacea.ec.europa.eu/education/eurydice/all_publications.
- Fabrigar, L., & MacGregor, K. (2006). *Guttman Scaling* Thousand Oaks, CA: Sage Publications.
- Ferguson, N., Earley, P., Fidler, B., & Ouston, J. (2001). *Improving schools and inspections: The self-inspecting school*. London: Sage.

- Fidler, B., Earley, P., Ouston, J., & Davies, J. . (1998). Teacher gradings and Ofsted inspections: Help or hindrance as a management tool? *School Leadership & Management*, 18, 257-270.
- Fischhoff, B. (1975). Hindsight not equal to foresight: the effect of outcome knowledge on judgment under uncertainty. *Quality & Safety in health care*, 12(4), 304.
- Friedman, B. A. F., & Mark, A., & Markow, D. . (2008). Predictors of principals satisfaction with their schools. *Journal of Educational Administration*, 46(5), 30-37.
- Fullan, M. & Hargreaves, A. (1996). What's worth fighting for in your school? , New York: Teachers College Press.
- Fullan, M. (2003). *Change Forces with a Vengeance*. London, UK: Routledge Falmer
- Fullan, M. (2005). *Leadership & sustainability : system thinkers in action*. Thousand Oaks, Calif.: Corwin Press.
- Fullan, M. (2010). *All systems go:the change imperative for whole system reform*. Thousand Oaks, Calif.: Sage.
- Fullan, M. (2010). *Change leader : learning to do what matters most*. by Michael Fullan. San Francisco, Calif.: Jossey-Bass.
- Gaertner, H., & Pant, H. A. (2011). How valid are school inspections? Problems and strategies for validating processes and results. *Studies in Educational Evaluation*, 37(2), 85-93.
- Garret, P. (2012). *Talking School Improvement with the Geelong community*. Retrieved on November 21, 2012 from <http://ministers.deewr.gov.au/garret/talking-school-improvement-geelong-community>.
- Gay, L. R. (1987). *Educational research: competencies for analysis and application* (3rd ed.). Columbus: Merrill Publishing Company.
- Geijsel, F., Slegers, P., Leithwood, K. & Jantzi, D. . (2003). Transformational leadership effects on teachers' commitment and effort toward school reform. *Educational Administration* 41(3), 228-256.
- Geijsel, F. P., Krüger, M. L., & Slegers, P. J. C. (2010). Data feedback for school improvement: The role of researchers and school leaders. *The Australian Educational Researcher*, 37(2), 59-75.
- Geoff, S., & Du, H. Q. (2005). School Leadership and System Leadership. *The Educational Forum*, 69(2), 212.
- Gibbs, G. (2002). *Qualitative data analysis : explorations with NVivo*. Buckingham [Eng,]; Philadelphia, Pa. Open University.

- Gilbert, L. S. (2002). Going the distance: 'closeness' in qualitative data analysis software. *International Journal of Social Research Methodology*, 5(3), 215-228.
- Giles, C. H., & Hargreaves, A. (2006). The sustainability of innovative schools in learning organisations and professional learning communities during standardized reform. *Education Administration Quarterly*, 42(1).
- Gillard, J. (2010). *Speech on social equity and inclusion*, Retrieved June 9, 2010, from www.mediacentre.dewr.gov.au.
- Gordon, R. (1977). *Unidimensional scaling of social variables: Concepts and Procedures* New York: The Free Press.
- Government of Australia, (1989). *Ministerial Council for Education, Early Childhood Development and Youth Affairs*. Retrieved from Retrieved on December 20, 2011, from www.mceecdya.edu.au/mceecdya/meetings .
- Government of New Zealand. (2012). *Education Act of 1989*. Retrieved on March 2, 2012 from <http://www.legislation.govt.nz> .
- Government of Tasmania Department of Education and the Arts. (1990). *Accountability policy for the division of education* , Hobart, Tasmania: Department of Education and the Arts.
- Government of Western Australia. (1928). *Education Act of 1928*. Perth: Retrieved on November 15, 2011 from www.austlii.edu.au.
- Government of Western Australia. (1997). *Media Statement: Announcing the Green (draft) School Education Bill 1997*. Perth.
- Government of Western Australia. (2011). *MediaRelease* Perth: Retrieved December 20, 2011, from www.mediastatements.wa.gov.au.
- Government of Western Australia. (1997). *School Education Bill 1997*. Perth.
- Government of Western Australia. (1999). *School Education Act 1999*. Perth, Retrieved December 20, 2011, from www.austlii.edu.au.
- Government of Western Australia. (2000). *School Education Regulations 2000*. Perth, Retrieved December 20, 2011, from www.austlii.edu.au .
- Government of Western Australia (Hansard), (1998). *Legislative Assembly, School Education Bill 1997, Committee Debate*. Perth: Government of Western Australia.
- Gray, C., & Gardner, J. (1999). The Impact of School Inspections. *Oxford Review of Education*, 25(4), 455-468.
- Gray, J., & Wilcox, B. (1995). In the aftermath of inspection: The nature and fate of inspection report recommendations. *Research Papers in Education*, 10, 1-18.

- Gray, J. (2002). Jolts and reactions: Two decades of feeding back value-added information on schools' performance. . In A. J. V. R. Coe (Ed.), *School improvement through performance feedback*. Lisse, The Netherlands: Swets & Zeitlinger.
- Gray, J., Hopkins, D., Reynolds, D., Wilcox, B., Farrell, S., & Jesson, D. (2003). *Improving Schools: Performance and Potential*. Florence, KY: Taylor and Francis Group.
- Greene, J.C., & Caracelli, V. J. (1997). Advances in mixed-method evaluation: the challenges and benefits of integrating diverse paradigms, *New directions for evaluation*, Vol. 74, p. 97.
- Griffin, P. (1996). *OBE: Interpreting Evidence of Learning*. Paper presented at the Improving Student Learning Conference, Barton College of TAFE, Melbourne.
- Gross, S. J. (2012). Review of "On Her Majesty's School Inspection Service", from <http://nepc.colorado.edu/thinktank/review-on-her-majestys>.
- Grubb, W. N. (2000). Opening Classrooms and Improving Teaching: Lessons from School Inspections in England. *Teachers College Record*, 102(4), 696-723.
- Gurr, D. (2007). A review of school accountability in Australia: Diversity and progress in school accountability systems *Education Research for Policy and Practice*, 6(3), 165-186.
- Gurr, D. (2008). Principal leadership: What does it, what does it look like, and how might it evolve? *Australian Council for Educational Leaders, Monograph Series 42*.
- Guttman, L. (1944). *A basis for scaling quantitative data*. *American Sociological Review*, 9, 139-150.
- Guttman, L. (1950). *The basis for scalogram analysis*. Princeton, NJ: Princeton University Press.
- Hallinger, P., & Heck, R. H. (1998). Exploring the principal's contribution to school effectiveness: 1980-1995. *School effectiveness and school improvement*, 9(2), 157-191.
- Hambleton, R., & Swaminathan, H. (1985). *Item response theory: principles and applications*. Boston: Kluwer Nijhoff Publishing.
- Hanushek, E. W. (2007). The role of education quality for economic growth. *Policy Research Working Paper Series 4122*.
- Hargreaves, A., & Fink, D. (2004). The seven principles of sustainable leadership. *Educational Leadership*, 61(7), 8-13.

- Hargreaves, A., Lieberman, A., Fullan, M., & Hopkins, D. . (2005). *The Practice and Theory of School Improvement*. Dordrecht, The Netherlands: Springer.
- Hargreaves, A., & Shirley, D. (2008). Beyond Standardization: Powerful New Principles for Improvement. *Phi Delta Kappan*, 90(2), 135-143.
- Hargreaves, A. (2012). Singapore: the Fourth Way in action? *Educational Research for Policy and Practice*, 11(1), 7-17.
- Harris, A., James, S., Gunraj, J., & Clarke, P. . (2006). *Improving Schools in Exceptionally Challenging Circumstances: Tales from the Frontline*. London: Continuum.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- Hattie, J. (2009). *Visible learning: a synthesis of over 800 meta-analysis relating to achievement*. Milton Park: Routledge.
- Hattie, J. (2012). *Visible learning for teachers: Maximising impact on learning*. Abingdon, Oxon: UK: Routledge Publishers.
- Hechuan, S., & de Jong, R. (2007). Effective school improvement in The Netherlands. *International Journal of Educational Management*, 21(6), 504-516.
- Hesse-Biber, S. N. (2010). *Mixed methods research: Merging theory with practice* New York: Guildford Publications Inc.
- Hill, P., Lake, R., Celio, M.B., Campbell, C., Herdman, P., & Bulkley, K. . (2001). A Study of Charter School Accountability: National Charter School Accountability Study Jessup, MD: Department of Education.
- Hill, P. T., Lake, R.J., & Celio, M.B. (2002). *Charter schools and accountability in public education* Brookings Institution Press.
- Holger, G. (2011). How valid are school inspections? Problems and strategies for validating processes and results. *Studies in Educational Evaluation*, 37(2), 9.
- Holmes, E. (2009). *FAQ's for School Inspection*. New York: Routledge.
- Hopkins, D., Harris, A., Watling, R., & Beresford, J. (1999). From Inspection to School Improvement? Evaluating the Accelerated Inspection Programme in Waltham Forest. *British Educational Research Journal*, 25(5), 679-690.
- Hoxby, C. M. (2002). *The costs of accountability*. Stanford, CA: Hoover Institution Press.
- Huberman, A. M., & Miles, M. B. (1984). *Innovation up close: How school improvement works* New York: Plenum Press.

- Ingebo, G. S. (1997). *Probability in the measurement of achievement* Chicago: MESA Press.
- Inspectorate Independent Schools. (2012). Integrated Handbook - Framework: for inspectors and schools from www.isi.net/helpandresources.
- ISI, (Independent School Inspectorates). (2012). Handbook on School Registration, Retrieved June 22nd, 2011, from www.isi.net .
- Jacob, B. & Levitt, S.D. (2003). Rotten Apples: An investigation of the prevalence and predictors of teacher cheating. *The Quarterly Journal of Economics*, 118(3), 843-877.
- Jaffer, K. (2010). School inspection and supervision in Pakistan: Approaches and issues. *PROSPECTS*, 40(3), 375-392.
- James, D. (2008). Education: Marked room for improvement. *FT.com*(Journal Article) Retrieved 22nd June 2011, from <http://ecu.summon.serialsolutions.com/link/0/eLvHCXMwQywzh>.
- Janssens, F. J. G., & van Amelsvoort, G. H. W. C. H. (2008). School self-evaluations and school inspections in Europe: An exploratory study. *Studies in Educational Evaluation*, 34(1), 15-23.
- Jenkin, M. A. (2006). *Chicago archdiocesan elementary school principals*. Chicago, ILL: University of Chicago.
- Jerald, C. (2012). On Her Majesty's School Inspection Service, from <http://search.proquest.com.ezproxy.ecu.edu.au/docview/964183870> .
- Johnson, R. B. Onwuegbuzie, A. J. . (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Jon, S. (2006). Ofsted plans extra 'mini-inspections'. *The Times Educational Supplement*(4677), 4.
- Kane, T., & Staiger, D. (2002). The promise and pitfalls of using imprecise school accountability measures. *The Journal of Economic Perspectives*, 16(4), 91-114.
- Keats, J. A. (Ed.). (1997). *Classical Test Theory*, In John P. Keeves (Ed.), *Educational Research, Methodology and Measurement: An International Handbook*, UK: Pergamon Press.
- Kerra, M. (2009). Heads hit out at 'brutal' new Ofsted regime. *The Times Educational Supplement : TES*(4861), 4.
- Kerra, M. (2011). 'Failing' schools must improve more quickly: news. *The Times Educational Supplement : TES*(4966), 14.

- Kertesz, J. L. (2008). *Evaluation and professional development practices in Tasmanian high schools*. Unpublished PhD thesis, University of Tasmania, Launceston.
- King, K., Gurian, M., & Stevens, K. (2010). Gender-Friendly Schools. *Educational Leadership*, 68(3), 38-42.
- Kirby, M. (2012). Kirby draws the line on 'stolen' funding, *The Australian*. Retrieved December 5, 2012, from www.theaustralian.com.au/national-affairs/education/kirby.
- Kleinhenz, E., Ingvarson, L., & Danielson, C. (2004). Evaluation of the Standards and Professional Learning Project 2003 In Australian Council for Educational Research. Retrieved Dec. 20, 2011, from http://www.research.acer.edu.au/teaching_standards/6.
- Kleinhenz, E., & Ingvarson, L. (2005). Leadership in Catholic schools: Development framework and standards of practice, Retrieved April 5th, 2011, from http://works.bepress.com/elizabeth_kleinhenz/2
- Kleinhenz, E., Ingvarson, L., & Wilkinson, J. . (2008). Supporting new teachers in Victorian schools: Making the teacher registration process an opportunity for professional learning *Education Assessment and Evaluation Accountability*. Retrieved from http://research.acer.edu.au/teacher_education/8
- Kleinhenz, E., Ingvarson, L., Dinham, S. (2009). Evaluation and Revision of the CECV Leadership Standards Framework In ACER (Ed.), *Teaching Standards and Teacher Evaluation*.
- Kogan, M., Cullingford, C., & Maden, M. (1999). An evaluation of evaluators: The Ofsted system of school inspection. In C. Cullingford (Ed.), *An inspector calls: Ofsted and its effects on school standards* London: Kogan Page.
- Koretz, D. (2008). Test-based educational accountability: Research evidence and implications *Zeitschrift fur Padagogik*, 54(6), 777-790.
- Kornhaber, M. L. (2008). *Beyond standardization in school accountability*: Thousand Oaks, CA: Sage Publications
- Kyriakides, L., & Campbell, R. J. (2004). School self-evaluation and school improvement: A critique of values and procedures. *Studies in Educational Evaluation*, 30(1), 23-36.
- La Pointe, M. (2006). Effective schools - Effective principals. *Educational Leadership*, 36(1), 16.
- Learmonth, J. (2000). *What's in it for schools?* London: Routledge Falmer.
- Learmonth, M. (2006). Qualitative Research in Organization and Management. *An International Journal*, 1(2), 83-97.

- Lee, J. (2008). Is test-driven external accountability effective? Synthesizing the evidence from cross-state causal-comparative and correlational studies. *Review of Educational Research*, 78, 608-644.
- Lee, V. E., Dedrick, R. F., Smith, J. B. (1991). The Effect of the Social Organization of Schools on Teachers' Efficacy and Satisfaction. *Sociology of Education*, 64(3), 190-208.
- Leeuw, F. L. (2002). Reciprocity and education evaluations by European inspectorates: Assumptions and reality checks. *Quality in Higher Education*, 8, 137-150.
- Leithwood, K. J. (1992). *Developing Expert Leadership for Future Schools* London: Falmer Press.
- Leithwood, K. (2007). Accountabilities and policies don't work. Retrieved 30 April 2010, from www.oise.utoronto.ca/orbit/accountability_sample.html .
- Leithwood, K., Edge, K. & Jantzi, D. (1999). *Educational Accountability: The state of the art*: Gutersloh: Bertelsmann Foundation.
- Leithwood, K., Jantzi, D., Earl, L., Watson, N., Levin, B., & Fullan, M. . (2004). Strategic leadership for large-scale reform: The case of England's Numeracy and Literacy Strategy *School Leadership & Management*, 24(1), 57-79.
- Leithwood, K. & Jantzi, D. (2000). The effects of transformational leadership on organizational conditions and student engagement with school. *Journal of Educational Administration*, 38(2), 112-129.
- Leithwood, K., Louis, K.S., Anderson, S. & Wahlstrom, K. (2004). Review of research: How leadership influences student learning [Electronic version] Retrieved November 10, 2011, from <http://wallacefoundation.org/>.
- Leithwood, K., Louis, K., Anderson, A & Walkstrom, N (2004). How leadership influences student learning, Learning from Leadership Project. *The Wallace Foundation*. Retrieved June 22, 2011, from www.eduarchille.ca.
- Leithwood, K. & Steinbach, R. . (2003). *Leadership for especially challenging schools*. London: Pearson Publishers.
- Lenth, R. V. (2001). *Some practical guidelines for effective sample size determination* *American Statistician* 55, 187-193.
- Lenth, R. V. (2007). *Sample Size* (Vol. 3): In Neil J. Salkind (Ed.), *Encyclopaedia of Measurement and Statistics*, Thousand Oaks, CA: Sage Publications.
- Lewin, K. (1958). *Group Decision and Social Change*. New York: Halt, Rinehart, and Winston.
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology* 140, 1-55.

- Lowe, G. (2003). *Inspection, school improvement, development and change*. (BL: DXN068979). Dissertation/Thesis. Retrieved May 12, 2011, from <http://ecu.summon.serialssolutions.com/link/>
- Lubienski, S. T., Lubienski, C. & Crane, C.C. (2008). Achievement differences and school type: The role of school climate, teacher, certification and instruction. *American Journal of Education*, 115(1), 97-138.
- Luginbuhl, R., de Wolf, I., & Webbink, D. (2009). Do Inspections Improve Primary School Performance? *Educational Evaluation and Policy Analysis*, 31(3), 221-237.
- MacBeath, J. (1999). *Schools Must Speak For Themselves: The case for school self-evaluation*. London: Routledge.
- MacBeath, J. (2001). *Approaching self-evaluation from the inside*. Paper presented at the Australian Secondary Principals Association (ASPA) Conference 2001, Adelaide.
- MacNeill, N. (2007). *Changing teacher's pedagogic practices: A study of principal leadership*. PhD thesis, Curtin University of Technology, Perth, Western Australia.
- MacNeill, N. & Cavanagh, R.F. (2007). *Pedagogic obsolescence: A curtain call for the school principalship*. Peer-reviewed paper presented at the Australian Association for Research in Education conference at Fremantle, Western Australia, 25-29 November, 2007.
- Macpherson, R. J. S. (1996). Accountability research in education: Current developments. *International Journal of Educational Management*, 23(6), 475-478.
- Macpherson, R. J. S. (1998). Contractual or responsive accountability? Neo-centralist 'self-management' or systematic solidarity? . *Australian Journal of Education*, 42(1), 66-89.
- Marshall, C. (2008). SCHOOL INSPECTION: Thirty-five years of school inspection: raising educational standards for children with additional needs? *British Journal of Special Education*, 35(2), 69-77.
- Mary, M. (1998). Perspectives on School Effectiveness and School Improvement. *Cambridge Journal of Education*, 28(1), 146.
- Masters, G. N. (Ed.). (1997). The analysis of partial credit scoring, *Applied Measurement in Education*, Vol. 1((4), 279-298.
- Masters, G. N. (1997). *Partial Credit Model*. In JP. Keeves (Ed.) Educational research, methodology and measurement: An international handbook. Cambridge, UK: Pergamon.

- Masters, G. N. & Wright, B. D. (1984). The essential process in a family of measurement models. *Psychometrika*, 49, 529-544.
- Matthews, P., & Sammons, P. . (2004). *Improvement through inspections: An evaluation of the impact of Ofsted's work*. London: Ofsted.
- Maxwell, J. A. (2004). Causal explanation, qualitative research, and scientific inquiry in education. *Educational Researcher*, 33(2), 3-11.
- McCaffrey, M. (2004). MA high school accreditation at risk. *School Library Journal*, 50(12).25-31.
- Merki, K. M. (2011). Special Issue: Accountability systems and their effects on school processes. *Studies in Educational Evaluation*, 37(3), 177-179.
- Merriam, S. (2002). *Qualitative Research in Practice: Examples for discussion and analysis*. San Francisco: Jossey-Bass.
- MetLife. (2006). The MetLife survey of the American teacher: Expectations and experiences *Curriculum Leadership: An Electronic Journal for Leaders in Education* 4 (29).
- Meyer, J. W. R. (2008)). *The structure of educational organizations*. Thousand Oaks, CA: Sage.
- Michel, J. (1990). *An introduction to the logic of psychological measurement*: Hillsdale, NJ: Lawrence Erlbaum Associates Publishers.
- Miles, M. B., & Huberman, A. M. (1994). *An expanded sourcebook: Qualitative Data Analysis (Ed.2)* London: Sage.
- Mills, C., & Gale, T. . (2010). *Schooling in disadvantaged communities: Playing the game from the back of the field*. London Springer.
- Minichiello, V., Aroni, R., Timewell, E., & Alexander, L. . (1991). *In-depth interviewing: Researching people* Melbourne: Longman Cheshire.
- Ministerial Council for Education, Early Childhood Development and Youth Affairs, (MCEECDYA), (1989). *Adelaide Declaration on National Goals for Schooling in the Twenty-First Century*, Retrieved on March 3rd 2011, from www.mceedcya.edu.au .
- Ministry of Education. (1987). *Better schools in Western Australia: A programme for improvement*. East Perth: author.
- Ministry of Education (New Zealand). (2012). *School Audit Handbook*. Retrieved on March 2nd, 2012 from www.minedu.govt.nz .

- Mintrop, H. (2004). *Schools on Probation: How Accountability Works (and Doesn't Work)*. Columbia University: Teachers College Press.
- Mintrop, H., & Sunderman, G. L. (2009). Predictable Failure of Federal Sanctions-Driven Accountability for School Improvement—And Why We May Retain It Anyway. *Educational Researcher*, 38(5), 353-364.
- Moore, N. (1995). Education Act Review Retrieved from *Education Act Review Ministerial RUProjectTeam*. Perth.
- Morgan, J. H. (2008). *The gathering storm: Accreditation and the search for accountability in American higher education*: Indiana: Victoria Press.
- Mortimore, P. (1998). *The road to improvement: Reflections on school effectiveness*. Lisse, The Netherlands:: Swets & Zeitlinger.
- Mossenson, D. (1972). *State Education in Western Australia 1829-1960*. Nedlands, WA: University of Western Australia Press.
- Murphy, S. E., & Johnson, S. K. (2011). The benefits of a long-lens approach to leader development: understanding the seeds of leadership. 22, 3(459-470).
- Naidoo, D. G. (2004). *Finding the balance*. Thousand Oaks, CA: Sage Publications.
- National Library of Australia, (2011). *Perth Gazette 1846*. Perth: Retrieved on November 20, 2011 from <http://trove.nla.gov.au>.
- Newman, I., & Benz, C.R. . (1998). *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale: IL: Southern Illinois University Press.
- Newmann, F., King, B.M., & Rigdon, M. (1997). Accountability and school performance: Implications from restructuring schools. *Harvard Educational Review*, 67(1), 41-74.
- Normore, A. H. (2004). The edge of chaos: School Administrators and accountability. *Journal of Educational Administration*, 42(1), 55-77.
- Ochuba, V. O. (2009). Improving the Quality of Education in Nigeria through Effective Inspection of Schools. *Education*, 129(4), 734-741.
- Odeh, R. E., & Fozm M. . (1991). *Sample size choice: Charts for experiments with linear models (2nd ed.)*. New York.
- OFSTED. (1998). School evaluation matters (Raising Standards Series). from London: Author.
- OFSTED. (1999). *Handbook fro inspecting secondary schools with guidance on self-evaluation*. London: HMSO.

- OFSTED. (2007). *Review of the impact of inspection*. London: OfSTED.
- OFSTED. (2009). *Parents' perceptions of Ofsted's work - a report of the NFER for Ofsted*. London: Ofsted.
- OFSTED. (2010). *The framework for inspecting education in non-association independent schools* Manchester UK: Retrieved from www.ofsted.gov.uk.
- O'Neill, O. (2002). A Question of Trust, from www.bbc.co.uk/radio4/reith2002/ .
- Oppenheim, A. N. (1992). *Questionnaire design, interviewing and attitude measurement* London: Pinter Publishers.
- Pardini, P. (2002). Revival of the K-8 School. *School Administrator*, 59(3), 6-12.
- Parker, M. D. & Berman, N. G. . (2003). Sample size: More than calculations. *American Statistician*, 57, 166-170.
- Pashiardis, P. (1993). Selection methods for educational administrators in the USA. *International Journal of Educational Management*, 7(1), 27-35.
- Paul, G. (2007). Schools argue against 'inconsistent' inspection regime. *Public Finance*(Journal Article), 14.
- Perryman, J. (2007). Inspection and emotion. *Cambridge Journal of Education*, 37(2), 173-190.
- Perryman, J. (2010). Improvement after inspection. *Improving Schools*, 13(2), 182-196.
- Peterson, K. (2002). *The professional development of principals: Innovations and opportunities*: Thousand Oaks, CA: Sage Publications.
- Peterson, P. E. W., Martin R. . (2003). *No child left behind? The politics and practice of school accountability*. Washington, D.C.: The Brookings Institute.
- Plowright, D. (2007). Self-evaluation and Ofsted Inspection: Developing an Integrative Model of School Improvement. *Educational Management Administration & Leadership*, 35(3), 373-393.
- Plowright, D. (2008). Using Self-Evaluation for Inspection: How Well Prepared Are Primary School Headteachers? *School Leadership & Management*, 28(2), 101-126.
- Plowright, D. (2011). *Using mixed methods: Frameworks for an integrated methodology* Thousand Oaks, CA: Sage Publications.
- Punch, K. F. (2005). *Introduction to social science research: quantitative and qualitative approaches (2nd Ed.)*. Thousand Oaks, CA: Sage Publications.

- Punch, K.F. (2009). *Introduction to research methods in education*, Los Angeles, Sage Publications.
- Purkey, K. F., & Smith, M. S. (1983). Effective Schools: A review. *The Elementary School Journal*, 83(1), 427-452.
- Radii. (2005). Planning and accountability for school improvement: National and international literature review In Report for Student Outcomes Division: Victorian Department of Education and Training. (Ed.); Melbourne.
- Rallis, S. F., & Goldring, E.B. (1993). Beyond the individual assessment of principals: School-based accountability in Dynamic Schools. *Peabody Journal of Education*, 68(2), 3-23.
- Rankin, D. H. (1926). *The History of the Development of Education in Western Australia 1829-1923* Perth: Carrolls Publishers Ltd.
- Rasch, G. (1960/1980/1992). *Probabilistic models for some intelligence and attainment tests (expanded editions)*. Chicago, IL: MESA.
- Rasch Unidimensional Measurement Models. (2011). RUMM 2030 Retrieved November 10, 2011 from <http://www.rummlab.com.au/> .
- Raywid, M. A. (2002). Accountability: What's worth measuring? *Phi Delta Kappan*, 83(6), 25.
- Reback, R. (2008). Teaching to the rating; School accountability and the distribution of student achievement. *Journal of Public Economics*, 92(5-6), 21-40.
- Reeves, D., B. (2006). *The learning leader - How to focus school improvement for better results*: Rothstein, R. Alexandra, VA: Association for Supervision and Curriculum Development, London.
- Richards, L. (2004). *Using NVIVO in Qualitative Research*. Thousand Oaks, CA: Sage.
- Riordan, C. (1985). Public and Catholic Schooling: The effects of gender context policy. *American Journal of Education*, 93(4), 518-540.
- Riordan, C. (1991). *Girls and Boys in School: Together or Separate*. London: Teachers College Press.
- Robert, N. (1901). Behaviour. *American Educational Research Journal*, 2(12), 29-33.
- Rocco, T. S., Bliss, L. A. Gallagher, S., & Perez-Prado, A. . (2003). Taking the next Mixed methods research in organizational systems *Information Technology, Learning and Performance Journal*, 21(1), 19.
- Roger, P. (2008). Sting in the forked tail of inspections. *The Times Educational Supplement : TES*(4785), 37.

- Rosenthal, L. (2004). Do school inspections improve school quality? Ofsted inspections and school examination results in the UK. *Economics of Education Review*, 23, 143-151.
- Rothstein, R. J., & Wilder, T. (2002). From accreditation to accountability. *Phi Delta Kappan*, 90((9)), 35-55.
- Rothstein, R. J., & Wilder, T. (2008). *Grading education: Getting accountability right*. New York: Teachers College Press.
- Rubin, A. (2012). *Statistics for Evidence-Based Practice and Evaluation*, 3rd Ed., South Melbourne, Victoria: Cengage Learning Publishing.
- Ruffin, V. D. (2009). Grading education: Getting accountability right review. *Educational Policy*, 47((5)), 5-11.
- Ryan, A. M. (2006). Negotiating assimilation: Chicago catholic high schools' pursuit of accreditation. *History of Education Quarterly*, 46(3), 23-27.
- Sammons, P. (2008). Zero tolerance of failure and new labour approaches to school improvement in England. *Oxford Review of Education*, 34(6), 651-664.
- Scanion, M. (1999). The impact of OFSTED inspections, from www.nfer.ac.uk/publications/91013/.
- Scheerens, J., Glas, C.A.W., & Thomas, S. . (2003). *Educational evaluation, assessment, and monitoring: A systematic approach*. Lisse, The Netherlands: Swets & Zeitlinger.
- Schildkamp, K., & Visscher, A. (2010). The use of performance feedback in school improvement in Louisiana. *Teaching and Teacher Education*, 26(7), 1389-1403.
- SCSA. (2012). *School Curriculum and Standards Authority*. Perth: www.scsa.wa.edu.au.
- Selwyn, W. (2009). Though we had a good Ofsted inspection, the report left us with 'key issues' that were vague. I thought it was supposed to give practical tips for improvement? *The Times Educational Supplement*(4833), O37.
- Shannon, S. (2007). Nine characteristics of high-performing schools - second edition from <http://www.k-12.wa.us/research/pubdocs/pdf/9charactfor%2051p.pdf>.
- Shaw, I., Newton, D. P., Aitkin, M., & Darnell, R. . (2003). Do Ofsted inspections of secondary schools make a difference to GCSE results? *British Educational Research Journal*, 29, 63-75.
- Shulha, L., & Cousins, J. (1997). Evaluation use: Theory, research, and practice since 1986. *Evaluation Practice*, 18(3), 195-208.

- Shulman, L. S. (1986). *Paradigms and Research Programs in the Study of Teaching*. New York: Macmillan Publishing Company.
- Shulman, L. S. (1988). *Disciplines of Inquiry in Education: An Overview* Washington: American Educational Research Association.
- SICI, (Standing International Conference of Inspectorates), (2005). How good is our inspectorate? Follow-up? Retrieved November 2011, from www.siciinspectors.org/shared/data/pdf/sici .
- SICI, (Standing International Conference of Inspectorates), (2003). Effective school self-evaluation, Retrieved November 2011, from www.siciinspectors.org/shared/data/pdf/sici .
- Slecter, C. E. (2007). *Facing accountability in education*. New York: Teachers College Press.
- Smith, R. M. (1996). A comparison of methods for determining dimensionality in Rasch measurement. *Structural Equation Modeling*, 3(1), 25-40.
- Smyth, J. (2002). Value the learning, not the paper pushing. *New Zealand Education Review*, 7(39), 6.
- Sonia, B. J. (2006). *Relating performance-based accountability policy to the accountability practices of school leaders*. Unpublished Ph.D., University of Toronto, Toronto.
- Standaert, R. (2001). *Inspectorates of education in Europe: A critical analysis*. Leuven, Belgium: Acco.
- Statistical Package for the Social Sciences (SPSS) version 19 for Windows*. (2011). Statistics Package for the Social Sciences (SPSS) version 19 for Windows. New York IBM.
- Stiefel, L., Berne, R., Iatarola, P., & Fruchter, N. (2000). High school size: Effects on budgets and performance in New York City. *Educational Evaluation and Policy Analysis*, 22(1), 27-39.
- Strauss, L. & Volkweinm, J. F. (2003). *What works policy seminar on student success, accreditation and quality assurance*, Retrieved May 29, 2010, from www.aascu.org/media/pdf/whatworks_03.pdf .
- Strickland, N., (2003). The perspectives of key stakeholders on school accountability policy in Western Australia, Unpublished doctoral dissertation, Perth: University of Western Australia.
- Sudsberry, M. J. (2008). *The Role of the principal in leading school improvement*. Unpublished doctoral dissertation, Indiana: Indiana State University.

- Superfine, B. (2008). *The courts and standards-based education reform*: New York: Oxford University Press.
- Susan, G. (2011). Ofsted timescales for 'failing' schools: letters. *The Times Educational Supplement : TES*(4967), 6.
- Swaffield, S., & MacBeath, J. (2005). School Self-Evaluation and the Role of a Critical Friend. *Cambridge Journal of Education*, 35(2), 239-252.
- Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). Thousand Oaks, CA: Sage.
- Tashakkori, A. & Teddlie, C. (2003). Issues and dilemmas in teaching research methods courses in social and behavioural sciences: U.S. perspective. *International Journal of Social research Methodology*, 6(1), 61-77.
- Taylor, C., Bubb, S., Jones, J., Ahtaridou, E., & Earley, P. (2007). The self-evaluation form: is the SEF aiding school improvement? *Management in Education*, 21(3), 32-37.
- Teddlie, C., & Yu, F. . (2007). Mixed mehtods sampling: A typology with examples. *Journal of Mixed methods research*, 1(1), 77-100.
- Thiel, V. S., & Leeuw, F.L.,. (2003). The performance paradox in the public sector. *Beleidswetenschap*, 2, 123-143.
- Thomas, G. (1996). The New Schools' Inspection System: Some Problems and Possible Solutions. *Educational Management & Administration*, 24(4), 355-369.
- Thomas, G. (1998). A brief history of the genesis of the new schools inspection system. *British Educational Research Journal*, 46(4), 415-427.
- Thomas, R. M. (2003). *Blending qualitative and quantitative research methods in theses and dissertations*: Thousand Oaks, CA: Corwin.
- Thrupp, M. (1998). Exploring the politics of blame: School inspection and its contestation in New Zealand and England. *Comparative Educational Review*, 26(2), 195-209.
- Thrupp, M. (2001). *Failing schools and social disadvantage: an overview of new labour policies and their impact*. Paper presented at the British Educational Research Association Conference, Leeds.
- Thurstone, L. L. (1987). Psychophysical analysis. by L. L. Thurstone, 1927. *The American Journal of Psychology* 100(3-4), 587-609.
- Trimmer, K. (2003). *Review of the West Australian Department of Education Regulatory Framework*. Paper presented at the NZARE/AARE Conference 2003, Auckland, New Zealand.

- Trinidad, D., & Normore, H. A. . (2005). Leadership and gender: A dangerous liaison? *Leadership & Organizational Development Journal*, 26(7), 574-590.
- Trochim, W. M. K. (2006). *Guttman Scaling: The Research Methods Knowledge Base*. Cincinnati, Ohio: Atomic Dog Publishing.
- van Bruggen, J. C. (2010). Inspectorates of education in Europe: Some comparative remarks about their tasks and work S. report (Ed.), Retrieved May 3rd, 2011, from www.sici-inspectorates.org .
- Vaughan, A. (2002). Standards, accountability and the determination of school success. *The Educational Forum* 66(3), 206-213.
- Visser, A. J. (2002). *A Framework for studying School Performance Feedback Systems* Lisse, : Swets and Zeitinger.
- Vivienne, R. (2006). Self-evaluation vital for improvement, says Ofsted. *Public Finance*, 11.
- Vivienne, R. (2008). Ofsted proposals anger schools. *Public Finance*, 13.
- Warwick, M. (2008). Move over Ofsted, pupils are doing the inspection instead. *The Times Educational Supplement : TES*(4788), 20.
- Waugh, R. F. (2003). *On the forefront of educational psychology*: New York: Nova Science Publishers.
- Waugh, R. F., & Chapman, E.S. (2005). An analysis of dimensionality using factor analysis (True Score Theory) and Rasch measurement: What is the difference? Which method is better? *Journal of Applied Measurement*, 6(1), 80-99.
- Waugh, R. F. (2005). (Ed.) *Frontiers in educational psychology*. New York: Nova Science Publishers.
- Waugh, R. F. (2007). *Rasch measurement*. In N. J. Salkind (Ed.), *The encyclopedia of measurement and statistics*, (Vol.3, pp.820-825), Thousand Oaks, CA : Sage Publications.
- Waugh, R. F. (2010a). *Applications of Rasch measurement in education*. New York: Nova Science Publications.
- Waugh, R. F. (2010b) *Specialized Rasch measures applied at the forefront of education*, New York: Nova Science Publishers.
- Wergin, J. F. (2005). High education: Waking up to the importance of accreditation. *Change - Research Library*, 37(3), 25-31.
- Whitaker, B. (1997). Instructional leadership and visibility. *The Clearinghouse*, 70(3), 29-44.

- Whitty, G. (1998). New Labour, education and disadvantage. *Education and Social Justice*, 1(1), 2-8.
- Wiebes, F. (1998). *From outside to inside; valuable ideas of outsiders*. The Hague: Delwel Uitgeverij B.V..
- Wilcox, B., & Gray, J.(1996). *Inspecting schools: Holding schools to account and helping schools to improve*. Buckingham, UK: Open University Press.
- Wilcox, B. (2000). *Making school inspection visits more effective: The English Experience*. Paris: Unesco.
- Williams, P. (2000). Legislation Note: School Education Act of 1999 (WA). *Australia & New Zealand Journal of Law and Education*, 5(1), 53-57.
- William, S. (2010). Independents bid for inspection exemption. *The Times Educational Supplement : TES*(4899), 18.
- William, S. (2011). Thousands of schools could fall foul of new Ofsted regime: News. *The Times Educational Supplement : TES*(4945), 1.
- Wilson, T. A. (1996). *Reaching for a better standard: English school inspection and the dilemma of accountability for American Schools*: New York: Teachers College Press.
- Wise, A. E., & Darling-Hammond, L. . (1982). *Education by Voucher: Private Choice and the Public*. Santa Monica, CA: The Rand Corporation.
- Witten, H., Waugh, R. & Gray, J. (2012a). *School administrators' beliefs that actual school improvement were due to formal school registration*. Paper presented at the Pacific Rim Objective Measurement Symposium, August 10, 2012, Jiaxing, China.
- Witten, H., Waugh, R. & Gray, J. (2012b). *School administrators' beliefs that actual school improvements were due to formal school registration: A Rasch measurement*. Paper presented at the AARE-APERA Conference, December 6, 2012 Sydney, Australia.
- Witten, H., Waugh, R. & Gray, J. (2012c). *School administrators' beliefs that actual school improvements were due to formal school registration: Guttman scales and their inter-correlations*. Paper presented at the AARE-APERA Conference December 6, 2012, Sydney, Australia.
- Wolf, de, I. F., & Janssens, F. J. G. (2007). Effects and Side Effects of Inspections and Accountability in Education: An Overview of Empirical Studies. *Oxford Review of Education*, 33(3), 379-396.

- Wong, M. N. C., & Li, H. (2010). From External Inspection to Self-Evaluation: A Study of Quality Assurance in Hong Kong Kindergartens. *Early Education & Development, 21*(2), 205-233.
- Wright, B., & Masters, G. . (1982). *Rating scale analysis: Rasch measurement*. Chicago: MESA Press.
- Wright, B. D. (1996). Comparing Rasch measurement and factor analysis. *Structural Equation Modeling, 3*(1), 3-24.
- Wrigley, T. (2011). Paradigms of school change. *Management in Education, 25*(2), 62-66.
- Yun, G. W., & Trumbo, C. W. (2000). Comparative Response to a survey executed by post, email and web form. *Journal computer-mediated communication, 6*(1), 1-12.

Appendix A:



Edith Cowan University

Perth Western Australia

School of Education
Mt. Lawley. WA 6027
Ph.+61 8 6304 2000
Email: www.ecu.edu.au

Dear

(YOUR HELP IS NEEDED)

Does school registration improve your school?

My name is Harm Witten, I am the principal of an independent school located in Albany. Last year my school completed its second school renewal registration. It was both a challenging and rewarding experience!

I am also a PhD student at ECU and my research topic is entitled; The Attitudes of School Council Members and School Leaders to the Relationship between Formal School Registration and School Improvement. I'd like to know if school registration makes a difference! Hence, I am seeking your assistance and cooperation in this study.

On my website, <http://schoolreg.redirectme.net/> five school improvements are linked to each of the twelve criteria used in the school registration process. These improvements can be considered from the following four perspectives;

*There has been **no improvement** due to formal registration,
There has been **improvement, but not due** to school registration.
There has been **some improvement** due to formal registration,
There has been **significant improvement** due to formal registration.*

The above four perspectives are addressed in two categories: *This is...*

- a) what I **expected** would happen.*
- b) what **actually** happened.*

With approximately 72,000 students enrolled in non-government (Australia Independent Educators Union) schools, please anticipate that this study will provide new knowledge which in turn will help all schools facing the challenge of school improvement and school registration!

Your participation in this study is completely voluntary and anonymous. The time needed to complete this survey is approximately 15 minutes. A copy of the results is available upon request. I or my supervisor, Dr. Russell Waugh (ph. 9293 6941 or r.waugh@ecu.edu.au) are available to assist you or answer any questions. This study has been approved by and any concerns may be sent to the "Edith Cowan Research Ethics Committee"; Kim Gifkins (6304 2170) or research.ethics@ecu.edu.au.

Thanking you in advance,
Harm (Pete) Witten
ECU: ID 10171363

Appendix B:

Consent Letter



Edith Cowan University

Perth Western Australia

School of Education
Mt. Lawley. WA 6027

Telephone: +61 8 134 328
Fax: 9300 1257

CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

I, _____ have read the information above and any questions I have asked, have been answered to my satisfaction.

I am willing to participate in the research project conducted by Mr. Pete Witten, realizing that I may choose to withdraw at any time without prejudice.

I understand that I can telephone Mr. Witten at the School of Education (9842 5632) and request additional information about the study.

I understand that research data gathered for this study may be published provided that names or other identifying information is not used.

Participants Signature

Date

Contact Phone/Email

Contact postal address

Dr. Russell Waugh
ECU, School of Education
Mt. Lawley, WA
Ph. 9370 6941

Mr. Harm (Pete) Witten
Post Graduate Student
ECU, School of Education
Ph. 9841 3840

Email: r.waugh@ecu.edu.au

Email: pwitten@jcsa.wa.edu.au

Appendix C

Pilot Questionnaire Questions



Edith Cowan University
Perth Western Australia

School of Education
Mt. Lawley, WA 6027
Phone: +61 8 134 328
Fax: +61 8 9300 1257
Email: www.ecu.edu.au

Dear Colleague,

Thank you for your willingness to pilot test this questionnaire study. Your comments and suggestions will be appreciated and respected.

Your participation in this pilot test is completely voluntary and anonymous.

The time needed to complete this pilot questionnaire is approximately 20 minutes. Below are a number of questions which may assist you. Please feel free to add any comments related to this study.

The following four questions may serve to guide your considerations:

- 1) Does the study questionnaire adequately address the twelve criteria of school registration?
 - a) Do you think that the number of items listed for each criterion is sufficient?
 - b) Are the listed items clear and easy to understand?
- 2) Do the three response categories accurately represent the possible outcomes?
 - c) Should an additional response category be included?
- 3) How much time did you need to complete this questions (was it too much)?
- 4) Are the any other suggestions you could mention to help improve this study questions.

Please do not hesitate to contact me or my supervisor Dr. Russell Waugh (ph. 9293 6941) or r.waugh@ecu.edu.au if you have any questions related to this study.

Thanking you in advance,

Pete Witten (9841 3840 or pwitten@jcsa.wa.edu.au)
ECU: ID 10171363

Appendix D:

Journal Entry - Mrs. Gill Jenkins July 1st, 2011 41 Walters Drive, Osborne Park

Mrs. Gill Jenkins discussed her role in the development of the twelve criteria and standards that are used during the formal school registration process. The following key points were raised;

- 1) The new School Education Act of 1999, which became law in July of 2001, did not specify or describe the standards of the twelve criteria that would be used during the formal school registration process.
- 2) In March of 2003, Mrs. Jenkins was employed by the Department of Education Services to detail the standards of the twelve criteria. There wasn't much time left before the formal school registration process needed to be implemented.
- 3) Mrs. Jenkins indicated that she had been assisted in the following ways;
 - i) The school inspection guidelines which had previously been used by District Superintendents during their inspections of non-government schools. These school inspection guidelines were general in nature and dated back to the early 1990s.
 - ii) Retired School Superintendents were called in to offer their advice on what they considered to be essential requirements for any school. These retired School Superintendents would later also be temporally employed by the Department of Education Services as School Registration Panels. They were commissioned to conduct the school visits and desktop audits for the non-government schools seeking formal school registration.
 - iii) Mr. Bronte Parkin, Exec. Dir., Department of Education Services, the Office of Catholic Education and Mrs. Audrey Jackson, Exec. Dir. the Association of Independent Schools in Western Australia, all worked very closely with Mrs. Jenkins.

The new School Education Act of 1999 stipulated that the Minister of Education consult with CEO and AISWA.
 - iv) Research into the Office for Standards in Education (OfSTED) in the UK and similar international school inspection processes provided Mrs. Jenkins with background information and a point of comparison during discussions regarding the standards of the twelve criteria.
 - v) Mrs. Jenkins indicated that she had carefully reviewed the formal school registration process in Tasmania, since the Tasmanian Education Act of 1994 was quite similar to the Western Australia's new School Education Act of 1999.

Appendix E:

Journey Entry - Mr. Bronte Parkin July 12th, 2011 22 Hasler Drive, Osborne Park

Mr. Bronte Parkin shared the following key points in regards to the development of twelve criteria and standards used during the formal school registration process. Also present during this conversation were Mr. Ron Grimley (Exec. Dir., Dep. of Education Services) and Mr. Edward Simons (School Registration Manager).

- 1) In 1994, the Government of Western Australia established a separate agency, known as the Office of Non-Government Schools (ONGS), to monitor and supervise the education of children enrolled in non-government schools. Prior to that time, non-government schools were controlled by guidelines that had been established by the Department of Education.
- 2) In 1996, the ONGS was renamed the Department of Education Services. It inherited and adopted the guidelines for school inspection used by the Department of Education. These guidelines were used by District Superintendents when they inspected schools. The guidelines for school inspection were very basic and differed somewhat between various school districts. Since, the District Superintendents were former school principals, they were considered to be competent and professional in their assessments of what would constitute an efficient school.
- 3) Up until the 1970s, Education Act of 1928 had referred to non-government schools as 'efficient schools'. The steady growth of non-government schools had prompted the Government of Western Australia to draft the new School Education Act.
- 3) Mrs. Jill Jenkins was hired in 2003, and commissioned to formulate the criteria of formal school registration. There was a close working relationship between Mrs. Jenkins, Mrs. Audrey Jackson (AISWA) and Mr. Parkin (DES).
- 4) The initial period of formal school registration was set at 1 to 7 years, depending upon how well the non-government school was able to meet the standards of formal school registration. However, for logistical purposes, it was necessary to give some shorter and longer periods of registration.
- 5) It was Dr. Ken Evans who was seconded from the Department of Education to review and draft the new School Education Act of 1999. The School Education Act of 1999 was to have been reviewed in 2006.
- 6) A review of School Registration in Tasmania, New Zealand and the UK had helped to provide background information needed during the process of developing WA's formal school registration process.

Appendix F:

Journal Entry - Dr. Ken Evans

May 16th, 2011

41 Walters Drive, Osborne Park

Dr. Ken Evans described the development of Western Australia's new School Education Act of 1999. During this discussion he raised the following key points.

- 1) The Education Act of 1928 had become unmanageable. There were numerous amendments to the Act and its antiquated language failed to address current issues. The new act was meant to be simpler and devoid of the many regulations previously in place with the Education Act of 1928.
- 2) When the Education Act of 1928 was written, there were very few non-government schools and they were known as 'efficient schools'. This didn't mean that government schools were not efficient; no one questioned a government school.
- 3) The Government had a number of District Superintendents located in different regions and they used to go to the non-government schools on a regular basis. Non-government schools used to like these visits, since it was somebody from the outside who could provide helpful advice. District Superintendents were usually former Principals of High School or Primary Schools.
- 4) With increasing enrolment in non-government schools, the need for a formal registration process also grew, since parents might assume that a non-government school had received the government's approval to operate as a school, simply by virtue of its existence.
- 5) The new School Education Act of 1999 gives the Minister a means whereby he can be assured that the education in a non-government school is able to meet certain criteria, as they are listed in Sec. 159 and 160 of the Act.
- 6) Mrs. Jill Jenkins was commissioned by the Department of Education Services to formulate the criteria and standards to be used during the formal school registration process of non-government schools.

Appendix G:

Journal Entry - Mr. Edward Simons

May 16th, 2011

22nd Hasler Drive, Osborne Park

Mr. Edward Simons explained the following regarding his role and perceptions on the formal school registration process.

- 1) Mr. Simons indicated that he had only served six months as Registration Office and was unfamiliar with circumstances or developments which had led to the twelve criteria used in formal school registration.
- 2) The formal school registration process was still being refined and that further research would serve to broaden the development of criteria and standards. He had noticed the globalisation of education and was pleased with the Department of Education Services best practice policy.
- 3) While the criteria serve an important function within the formal school registration process, the Department of Education Services is governed by the School Education Act of 1999, in which the primary role of the Minister of Education is accented. Ultimately, it is the Minister of Education who determines the criteria and standards of education in Western Australia.
- 4) Although non-government schools might want the Department of Education Service (DES) to assist them in meeting the criteria and standards of formal school registration, DES cannot be a judge of and a coach for non-government schools at the same time.
- 5) The criteria and standards of formal school registration are all important, yet it is possible that the Minister of Education might consider one criterion more important than another. For example, the safety of students would be most likely be considered an essential criterion.
- 6) The time needed for preparing a formal school registration application should probably not exceed a three week period, since schools are already required to have the policies and procedures in place that meet the criteria and standards of formal school registration. It should simply be a matter of presenting current practice.

Appendix H:

Study Questionnaire



Mt. Lawley, WA 6027
Phone: +61 8 6304 2000
www.ecu.edu.au

DOES SCHOOL REGISTRATION IMPROVE YOUR SCHOOL?

This survey is anonymous and voluntary!

Please tick **one** of the following **four** responses next to **both** categories:

Criteria 1: School Governance

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The efficiency of School Council meetings				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The School Council's appointment and review of management staff				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The School Council's community and public relations				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The expertise and skills of School Council members				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The School Councils understanding of the distinction between governance and management				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on School Governance and School Registration.

Criteria 2: School Financial Viability

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The standard and quality of the school's financial management.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The expertise and qualifications of the school's financial management staff.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's long term financial planning process and results.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's financial risk assessment and analysis.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's final (or end of year) income and expenditure position.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on School Financial Viability and School Registration.

Criteria 3: Enrolment & Attendance

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The daily attendance rate of students at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's response to truancy situations.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The support of parents for the school's attendance policy and procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's student enrolment projections.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's enrolment policy and procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on Enrolment/Attendance and School Registration.

Criteria 4: Number of Students

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The number of students in each year group.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The total number of students at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The student-teacher ratio at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's student recruitment policy and procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's student retention rate and tracking system.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on the Number of Students and School Registration.

Criteria 5: Instructional Time

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The school's compliance to the legal requirements.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The daily instructional times at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number of school days within the school's yearly calendar.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's extra-curricular events supporting instructional times.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A reduction in the number of disruptions at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on School Instructional Time and School Registration.

Criteria 6: School Staff

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The skills and expertise of teaching and non teaching staff.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The management and performance review of staff at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The professional development programme for staff at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The moral and professionalism of staff at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The support of parents and school community for staff at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on School Staff and School Registration.

Criteria 7: School Infrastructure

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The cleanliness and appearance of the school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's maintenance schedule and plan.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Occupational Health and Safety standards at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number of classrooms and learning spaces at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's welcome and receptiveness to parents and visitors.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on School Infrastructure and School Registration.

Criteria 8: School Curriculum

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The school's curriculum program.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's strategic whole-school curriculum planning and implementation.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's cross-curricular planning and implementation.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's use of student achievement data for classroom curriculum planning.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's communication to parents about curriculum.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on School Curriculum and School Registration.

Criteria 9: Student Learning Outcomes

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The school's policy and procedures for student assessment.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's use of external tests, e.g. NAPLAN.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's expectations and standards for student learning.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's learning program for talented and gifted students.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's learning program for students at risk.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on Student Learning Outcomes and School Registration.

Criteria 10: Care for Students

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The management and storage system of student records at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The procedures to ensure internet safety.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The student behaviour management at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's emergency-crisis response policy and procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's pastoral care program.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on Levels of Care for Students and School Registration.

Criteria 11: Disputes and Complaints

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The reduction of complaints registered at school.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's disputes and complaints procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's commitment to the principles of procedural fairness.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parent satisfaction of the school's dispute and complaints procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's public relations on matters dealing with disputes and complaints.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on Disputes & Complaints and School Registration.

Criteria 12: Legal Compliance

	no improvement, due to school registration	improvement, but not due to the school registration	some improvement, due to school registration	significant improvement, due to school registration
The school's compliance to legal requirements				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff training on matters dealing with legal requirements.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's development of policy to comply with legal requirements.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's risk assessment of policies and procedures.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The school's commitment to legal compliance.				
What I expected would happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What actually happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any additional comments on Legal Compliance and School Registration.

Questionnaire on Participants Details

In order to provide further understanding of the relationship between school registration and school improvement, please consider the following questions. Your answers will serve to contextualise the above questionnaire responses.

All data collected for this study will remain strictly confidential.

(Please circle the correct participant detail options.)

Gender: Male Female

School Location: a) Metro b) Regional c) Remote

School Type: a) Primary b) Middle c) Secondary d) k-12 Other _____

Student Gender: a) Co-Ed. b) Girl c) Boy

School Size: a) <100 b) <500 c) <1000 d) <2000

Academic Qualifications: BEd. M.Ed. PhD/Doc Other _____

Age:

- 25-30 years
- 30-35 years
- 35-40 years
- 40-45 years
- >50 years

School Position: a) School Council Member b) Principal c) Deputy Principal d) Other _____

Yrs. of Experience:

- < 2 years
- 2-5 years
- 6-10 years
- >10 years

If you would like to participate in an interview on this study, please call (9841 3840 bus hr.) or email pwitten@jcsa.wa.edu.au. Your participation will be kept confidential.
Thank You
Mr. Pete Witten

Appendix I: Guttman Scale Scores: School Finance

Name ID	Criterion 2	Guttman Scale Scores for Actual and Expected School Improvements Due to School Registration										
	Item 11	17	15	12	18	16	19	20	13	14		
	Easiest									hardest		total score
83	4	3	3	4	4	4	4	4	4	4	4	38
92	4	3	3	4	3	3	3	3	3	3	3	32
56	4	4	4	3	3	3	3	3	3	3	1	31
100	4	3	3	4	4	4	2	2	2	2	2	30
99	2	4	4	2	3	2	4	2	2	3	3	29
21	3	3	3	4	1	1	3	3	3	3	3	27
87	3	2	3	3	2	3	3	3	2	2	2	26
80	4	3	3	3	1	3	2	3	1	1	1	24
81	3	3	2	3	3	2	2	2	2	2	2	24
101	2	2	3	2	2	4	2	2	2	3	3	24
54	3	3	2	2	3	2	2	2	2	2	2	23
75	3	2	2	3	2	2	2	2	2	2	2	22
1	1	1	2	3	2	3	1	3	2	3	3	21
42	3	3	3	1	1	1	3	1	3	2	2	21
89	4	3	3	1	1	1	3	1	3	1	1	21
90	3	2	2	3	2	2	2	2	1	2	2	21
11	2	3	2	2	3	2	2	2	1	1	1	20
12	2	2	2	2	2	2	2	2	2	2	2	20
26	3	3	3	3	3	1	1	1	1	1	1	20
44	3	1	2	3	1	2	1	1	3	3	3	20
86	2	2	2	2	2	2	2	2	2	2	2	20
88	2	2	2	2	2	2	2	2	2	2	2	20
103	2	2	2	2	2	2	2	2	2	2	2	20
85	2	1	2	3	3	3	1	1	1	2	2	19
4	1	3	3	1	3	3	1	1	1	1	1	18
65	3	3	1	3	3	1	1	1	1	1	1	18
93	1	2	3	1	2	3	2	2	1	1	1	18
6	1	4	1	1	4	1	1	1	1	1	1	16
7	1	2	2	1	2	2	2	2	1	1	1	16
55	3	2	2	1	1	1	1	1	3	1	1	16
91	2	1	2	2	1	2	2	2	1	1	1	16
29	1	1	3	2	1	3	1	1	1	1	1	15
59	2	2	2	1	1	1	2	1	2	1	1	15
97	1	1	1	2	2	2	1	2	1	2	2	15
2	1	1	1	2	2	2	1	2	1	1	1	14
50	3	1	1	3	1	1	1	1	1	1	1	14
51	1	2	2	1	2	2	1	1	1	1	1	14
60	1	3	1	1	3	1	1	1	1	1	1	14
66	1	3	1	1	3	1	1	1	1	1	1	14
74	2	1	2	2	1	2	1	1	1	1	1	14
82	1	3	1	1	3	1	1	1	1	1	1	14
95	1	1	3	1	1	3	1	1	1	1	1	14
9	1	2	1	1	2	2	1	1	1	1	1	13
68	1	1	4	1	1	1	1	1	1	1	1	13
23	3	1	1	1	1	1	1	1	1	1	1	12
34	1	1	1	1	1	1	2	2	1	1	1	12
38	2	1	1	2	1	1	1	1	1	1	1	12
102	1	1	1	1	1	2	1	2	1	1	1	12
28	2	1	1	1	1	1	1	1	1	1	1	11
3	1	1	1	1	1	1	1	1	1	1	1	10
5	1	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	1	10
10	1	1	1	1	1	1	1	1	1	1	1	10
19	1	1	1	1	1	1	1	1	1	1	1	10
25	1	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	1	10
36	1	1	1	1	1	1	1	1	1	1	1	10
49	1	1	1	1	1	1	1	1	1	1	1	10
52	1	1	1	1	1	1	1	1	1	1	1	10
57	1	1	1	1	1	1	1	1	1	1	1	10
58	1	1	1	1	1	1	1	1	1	1	1	10
62	1	1	1	1	1	1	1	1	1	1	1	10
67	1	1	1	1	1	1	1	1	1	1	1	10
73	1	1	1	1	1	1	1	1	1	1	1	10
76	1	1	1	1	1	1	1	1	1	1	1	10
78	1	1	1	1	1	1	1	1	1	1	1	10
84	1	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	1	10
96	1	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	1	10
104	1	1	1	1	1	1	1	1	1	1	1	10
	128	126	126	121	121	119	106	105	102	99		

Appendix J: Guttman Scale Scores: Enrolment & Attendance

Name ID	Criterion 3 Actual and Expected School Improvements Due to Formal School Registration										
	Item 30 Easiest	29	24	26	21	22	25	23	28	27 Hardest	
4	4	4	4	3	4	4	3	4	1	1	32
83	3	3	3	3	2	3	3	3	3	3	29
90	3	3	2	2	4	4	3	2	2	2	27
99	3	3	1	3	3	3	3	1	3	4	27
100	2	2	3	3	3	3	3	3	2	2	26
1	4	3	3	3	2	3	2	1	3	1	25
21	3	3	3	3	1	1	3	3	2	1	23
11	3	1	3	2	3	3	2	3	1	1	22
36	1	1	3	3	3	3	3	3	1	1	22
51	3	3	3	2	3	1	2	3	1	1	22
74	2	2	2	2	2	2	2	2	3	3	22
87	2	2	2	2	3	3	2	2	2	2	22
89	3	3	2	1	2	2	1	2	3	3	22
104	1	1	4	1	4	4	1	4	1	1	22
26	3	4	1	4	1	1	3	1	1	2	21
42	4	3	2	1	2	2	1	2	2	2	21
56	3	4	1	3	1	1	3	1	1	3	21
57	3	3	3	2	1	1	2	2	2	2	21
60	3	4	3	1	3	1	1	3	1	1	21
103	3	2	2	2	2	2	2	2	2	2	21
12	2	2	2	2	2	2	2	2	2	2	20
54	3	3	2	2	1	1	2	2	2	2	20
88	2	2	2	2	2	2	2	2	2	2	20
93	3	3	1	4	1	1	4	1	1	1	20
96	2	2	2	2	2	2	2	2	2	2	20
52	3	3	4	1	1	1	1	3	1	1	19
80	4	3	1	2	1	1	2	1	2	2	19
59	2	3	3	1	2	1	2	2	1	1	18
75	2	2	1	2	1	1	2	1	3	3	18
91	2	2	1	2	2	2	2	1	2	2	18
92	2	2	1	1	3	3	1	1	2	2	18
76	4	2	3	1	1	1	1	2	1	1	17
7	2	2	1	2	1	1	2	1	2	2	16
49	3	3	3	1	1	1	1	1	1	1	16
62	1	1	3	3	1	3	1	1	1	1	16
81	2	2	1	2	1	1	2	1	2	2	16
85	3	2	3	2	1	1	1	1	1	1	16
86	2	2	1	1	2	2	1	1	2	2	16
2	2	1	1	1	3	2	1	1	2	1	15
58	1	1	1	1	3	3	1	2	1	1	15
97	2	1	2	2	1	2	1	1	2	1	15
6	3	3	1	1	1	1	1	1	1	1	14
10	3	3	1	1	1	1	1	1	1	1	14
102	2	1	1	2	1	2	1	1	2	1	14
9	2	2	2	1	1	1	1	1	1	1	13
29	3	1	1	2	1	1	1	1	1	1	13
23	3	1	1	1	1	1	1	1	1	1	12
28	3	1	1	1	1	1	1	1	1	1	12
34	1	1	1	2	1	1	2	1	1	1	12
84	2	2	1	1	1	1	1	1	1	1	12
95	1	1	1	1	2	2	1	1	1	1	12
3	1	1	1	1	1	1	1	1	1	1	10
5	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	10
25	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
38	1	1	1	1	1	1	1	1	1	1	10
44	1	1	1	1	1	1	1	1	1	1	10
50	1	1	1	1	1	1	1	1	1	1	10
55	1	1	1	1	1	1	1	1	1	1	10
65	1	1	1	1	1	1	1	1	1	1	10
66	1	1	1	1	1	1	1	1	1	1	10
67	1	1	1	1	1	1	1	1	1	1	10
68	1	1	1	1	1	1	1	1	1	1	10
73	1	1	1	1	1	1	1	1	1	1	10
78	1	1	1	1	1	1	1	1	1	1	10
82	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	10
	146	132	118	114	111	111	108	105	101	99	

Appendix K: Guttman Scale Scores – Number of Students

Name ID	Criterion 4 Actual and Expected School Improvements Due to Formal School Registration										
	Item 40 easiest	39	38	37	34	36	33	35	32	32 hardest	total score
75	1	1	3	3	3	2	3	2	3	3	24
89	3	3	3	3	2	1	2	1	2	2	22
99	3	3	2	3	2	1	2	1	2	2	21
4	4	4	3	3	1	1	1	1	1	1	20
7	2	2	2	2	2	2	2	2	2	2	20
12	2	2	2	2	2	2	2	2	2	2	20
74	2	2	2	2	2	2	2	2	2	2	20
81	3	3	2	2	2	1	2	1	2	2	20
88	2	2	2	2	2	2	2	2	2	2	20
91	2	2	2	2	2	2	2	2	2	2	20
100	2	2	2	2	2	2	2	2	2	2	20
101	2	2	2	2	2	2	2	2	2	2	20
103	2	2	2	2	2	2	2	2	2	2	20
1	4	2	3	1	2	3	1	1	1	1	19
11	3	1	2	1	2	3	1	3	2	1	19
57	3	2	2	2	2	2	2	2	1	1	19
42	3	3	2	2	2	1	2	1	1	1	18
54	2	2	2	2	2	2	2	2	1	1	18
55	2	2	2	2	2	2	2	2	1	1	18
59	2	4	2	4	1	1	1	1	1	1	18
60	3	3	3	3	1	1	1	1	1	1	18
80	1	1	2	2	2	1	2	3	2	2	18
92	3	3	1	1	2	1	2	1	2	2	18
56	1	3	1	1	3	1	3	1	1	1	16
86	2	1	2	2	2	1	1	1	2	2	16
90	3	3	1	1	1	3	1	1	1	1	16
93	2	2	1	1	2	1	2	1	2	2	16
49	4	3	1	1	1	1	1	1	1	1	15
52	4	3	1	1	1	1	1	1	1	1	15
85	3	2	3	2	1	1	1	1		1	15
97	2	1	2	1	2	2	1	1	2	1	15
23	1	1	1	1	1	3	1	3	1	1	14
87	2	2	1	1	1	2	1	2	1	1	14
102	2	1	2	1	2	2	1	1	1	1	14
2	1	1	2	1	2	2	1	1	1	1	13
9	2	2	1	1	1	2	1	1	1	1	13
21	1	2	1	3	1	1	1	1	1	1	13
51	1	1	2	2	1	1	1	1	1	1	12
73	2	1	1	1	1	2	1	1	1	1	12
83			1	1	1	3	1	3	1	1	12
95	2	2	1	1	1	1	1	1	1	1	12
10	1	1	2	1	1	1	1	1	1	1	11
67	1	1	1	1	2	1	1	1	1	1	11
3	1	1	1	1	1	1	1	1	1	1	10
5	1	1	1	1	1	1	1	1	1	1	10
6	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	10
25	1	1	1	1	1	1	1	1	1	1	10
26	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
28	1	1	1	1	1	1	1	1	1	1	10
29	1	1	1	1	1	1	1	1	1	1	10
36	1	1	1	1	1	1	1	1	1	1	10
38	1	1	1	1	1	1	1	1	1	1	10
44	1	1	1	1	1	1	1	1	1	1	10
50	1	1	1	1	1	1	1	1	1	1	10
58	1	1	1	1	1	1	1	1	1	1	10
62	1	1	1	1	1	1	1	1	1	1	10
65	1	1	1	1	1	1	1	1	1	1	10
66	1	1	1	1	1	1	1	1	1	1	10
68	1	1	1	1	1	1	1	1	1	1	10
76	1	1	1	1	1	1	1	1	1	1	10
78	1	1	1	1	1	1	1	1	1	1	10
82	1	1	1	1	1	1	1	1	1	1	10
84	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	10
96	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	10
104	1	1	1	1	1	1	1	1	1	1	10
	119	112	104	101	98	97	91	90	87	86	

Appendix L: Guttman Scale Scores – Instructional Time

Name ID	Criterion 5 Actual and Expected School Improvements Due to Formal School Registration										
	Item 42	41	44	43	46	45	48	47	50	49	
	easiest									hardest	total score
80	3	3	3	3	3	3	2	2	2	2	26
81	3	3	3	3	3	3	1	1	2	2	24
57	4	3	3	2	3	1	2	2	1	1	22
87	4	4	2	2	2	2	2	2	1	1	22
89	3	3	1	1	3	3	1	1	3	3	22
83	4	3	2	2	2	2	2	2	1	1	21
60	4	4	1	3	1	3	1	1	1	1	20
88	2	2	2	2	2	2	2	2	2	2	20
91	3	3	2	2	2	2	2	2	1	1	20
1	3	2	1	1	2	1	3	1	3	2	19
59	4	2	1	1	1	1	2	2	1	4	19
25	1	1	3	3	3	3	1	1	1	1	18
50	1	1	3	3	3	3	1	1	1	1	18
75	3	3	1	1	1	1	3	3	1	1	18
78	1	1	3	3	3	3	1	1	1	1	18
84	1	1	3	3	3	3	1	1	1	1	18
90	4	4	1	1	1	1	2	2	1	1	18
93	3	3	3	3	1	1	1	1	1	1	18
100	3	3	3	3	1	1	1	1	1	1	18
104	1	1	3	3	3	3	1	1	1	1	18
11	3	4	3	1	1	1	1	1	1	1	17
7	3	3	1	1	1	1	1	1	2	2	16
21	4	3	1	2	1	1	1	1	1	1	16
23	3	3	1	1	1	1	2	1	2	1	16
42	3	3	1	1	1	1	1	1	2	2	16
82	3	3	3	1	1	1	1	1	1	1	16
101	3	3	2	2	1	1	1	1	1	1	16
102	3	3	2	1	1	1	1	1	2	1	16
103	2	2	2	2	1	1	2	2	1	1	16
26	4	3	1	1	1	1	1	1	1	1	15
51	2	1	1	1	1	1	2	2	2	2	15
56	3	4	1	1	1	1	1	1	1	1	15
85	4	3	1	1	1	1	1	1	1	1	15
8	3	1	3	1	1	1	1	1	1	1	14
9	3	3	1	1	1	1	1	1	1	1	14
28	3	3	1	1	1	1	1	1	1	1	14
65	3	3	1	1	1	1	1	1	1	1	14
68	3	3	1	1	1	1	1	1	1	1	14
3	1	2	1	2	1	2	1	1	1	1	13
62	4	1	1	1	1	1	1	1	1	1	13
76	3	2	1	1	1	1	1	1	1	1	13
86	1	1	1	1	2	1	2	1	2	1	13
38	2	2	1	1	1	1	1	1	1	1	12
44	1	1	1	1	1	1	2	2	1	1	12
54	2	2	1	1	1	1	1	1	1	1	12
2	2	1	1	1	1	1	1	1	1	1	11
55	1	2	1	1	1	1	1	1	1	1	11
4	1	1	1	1	1	1	1	1	1	1	10
5	1	1	1	1	1	1	1	1	1	1	10
6	1	1	1	1	1	1	1	1	1	1	10
10	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
29	1	1	1	1	1	1	1	1	1	1	10
36	1	1	1	1	1	1	1	1	1	1	10
49	1	1	1	1	1	1	1	1	1	1	10
58	1	1	1	1	1	1	1	1	1	1	10
66	1	1	1	1	1	1	1	1	1	1	10
67	1	1	1	1	1	1	1	1	1	1	10
73	1	1	1	1	1	1	1	1	1	1	10
74	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	10
95	1	1	1	1	1	1	1	1	1	1	10
96	1	1	1	1	1	1	1	1	1	1	10
97	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	10
99	1	1	1	1	1	1	1	1	1	1	10
	146	134	99	95	90	89	83	79	79	78	

Appendix M: Guttman Scale Scores – School Staff

Person ID	Criterion 6 Actual and Expected School Improvements Due to Formal School Registration										
	Item 53	54	56	52	55	60	51	58	57	59	
57	4	3	3	3	3	3	3	3	3	3	31
100	4	3	1	3	1	4	4	3	4	4	31
93	3	3	3	2	3	3	2	3	3	3	28
101	4	4	2	2	2	3	2	2	2	3	26
81	3	2	3	2	3	3	2	3	2	2	25
4	4	4	3	1	3	2	1	2	2	2	24
43	3	1	2	3	3	2	3	2	3	2	24
52	3	2	3	2	3	2	3	2	2	2	24
60	4	2	2	2	4	1	2	2	2	3	24
88	4	4	2	2	2	2	2	2	2	2	24
90	1	1	4	3	4	3	3	1	1	3	24
91	2	2	2	3	2	3	3	2	2	3	24
102	3	3	3	2	3	2	2	2	2	2	24
84	3	2	2	3	2	2	3	2	2	2	23
21	3	3	2	2	2	2	2	2	2	2	22
75	2	2	2	1	2	3	1	3	3	3	22
76	3	3	1	3	1	1	3	3	3	1	22
77	3	3	3	3	3	1	3	1	1	1	22
82	2	2	2	3	2	2	3	2	2	2	22
104	2	2	3	2	3	2	2	2	2	2	22
2	2	3	3	3	1	3	2	2	1	1	21
7	2	2	2	2	2	2	2	2	2	2	20
55	2	2	2	2	2	2	2	2	2	2	20
56	2	2	2	2	2	2	2	2	2	2	20
69	3	3	3	2	3	1	2	1	1	1	20
86	2	2	3	1	2	3	1	2	2	2	20
23	3	3	3	2	3	1	1	1	1	1	19
87	2	2	2	2	2	2	2	2	2	2	19
10	3	3	3	1	3	1	1	1	1	1	18
30	3	3	1	1	1	3	1	3	1	1	18
58	2	3	1	2	1	1	2	2	2	1	17
89	2	3	2	2	2	1	2	1	1	1	17
26	3	3	3	1	1	1	1	1	1	1	16
39	2	2	1	3	1	1	3	1	1	1	16
67	2	2	2	1	2	1	1	2	2	1	16
3	1	2	2	2	1	2	1	2	1	1	15
45	1	1	2	2	2	2	2	1	1	1	15
98	1	2	2	2	1	2	1	2	1	1	15
103	1	2	2	2	1	2	1	2	1	1	15
11	1	1	1	1	1	3	1	3	1	1	14
37	3	3	1	1	1	1	1	1	1	1	14
59	3	3	1	1	1	1	1	1	1	1	14
94	3	3	1	1	1	1	1	1	1	1	14
96	2	2	1	2	1	1	2	1	1	1	14
99	3	3	1	1	1	1	1	1	1	1	14
3	2	2	1	1	1	1	1	1	1	1	12
61	1	2	2	1	1	1	1	1	1	1	12
63	1	1	1	3	1	1	1	1	1	1	12
85	2	2	1	1	1	1	1	1	1	1	12
29	1	1	1	1	1	1	1	1	2	1	11
5	1	1	1	1	1	1	1	1	1	1	10
6	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	10
9	1	1	1	1	1	1	1	1	1	1	10
25	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
50	1	1	1	1	1	1	1	1	1	1	10
51	1	1	1	1	1	1	1	1	1	1	10
66	1	1	1	1	1	1	1	1	1	1	10
68	1	1	1	1	1	1	1	1	1	1	10
74	1	1	1	1	1	1	1	1	1	1	10
79	1	1	1	1	1	1	1	1	1	1	10
83	1	1	1	1	1	1	1	1	1	1	10
95	1	1	1	1	1	1	1	1	1	1	10
97	1	1	1	1	1	1	1	1	1	1	10
105	1	1	1	1	1	1	1	1	1	1	10
	137	135	117	112	111	108	107	105	99	97	

Appendix N: Guttman Scale Scores – School Infrastructure

Name ID	Criterion 7 Item 66 easiest	Actual and Expected School Improvements Due to Formal School Registration										
		65	62	64	61	63	70	68	69	67 hardest	total score	
89	4	4	3	3	3	3	3	3	3	3	32	
26	4	4	4	4	4	4	1	1	1	1	28	
100	3	3	4	3	4	3	2	2	2	2	28	
1	3	2	4	3	3	1	3	3	2	2	26	
80	3	3	3	3	3	3	2	2	2	2	26	
88	3	3	3	3	3	3	2	2	2	2	26	
92	3	3	3	3	3	3	2	2	2	2	26	
51	3	2	3	3	3	3	3	2	1	2	25	
75	3	3	2	3	3	3	2	2	2	2	25	
42	3	3	4	1	4	3	2	1	2	1	24	
90	1	3	3	1	3	3	2	3	2	3	24	
44	3	3	4	3	3	3	1	1	1	1	23	
56	3	4	3	3	3	3	1	1	1	1	23	
57	4	3	2	3	2	3	2	1	2	1	23	
101	3	3	3	3	2	3	1	2	1	2	23	
4	3	3	2	2	2	2	2	2	2	2	22	
81	3	3	2	2	2	2	2	2	2	2	22	
83	3	3	2	2	2	2	2	2	2	2	22	
87	3	3	2	2	2	2	2	2	2	2	22	
93	3	3	3	3	3	3	1	1	1	1	22	
99	3	3	2	2	2	2	3	1	3	1	22	
85	2	2	2	2	2	2	3	2	2	2	21	
21	3	3	3	2	3	2	1	1	1	1	20	
49	3	3	4	1	4	1	1	1	1	1	20	
54	2	2	3	2	3	2	2	1	2	1	20	
59	2	2	4	2	2	2	2	1	2	1	20	
74	3	3	3	2	3	2	1	1	1	1	20	
91	2	2	2	2	2	2	2	2	2	2	20	
103	3	3	2	2	2	2	1	2	1	2	20	
23	3	3	3	3	1	1	1	1	1	1	18	
29	3	3	3	1	3	1	1	1	1	1	18	
50	1	1	3	3	3	3	1	1	1	1	18	
55	2	2	1	1	2	2	2	2	2	2	18	
66	1	1	3	3	3	3	1	1	1	1	18	
95	3	3	1	3	1	3	1	1	1	1	18	
86	3	3	2	2	1	1	2	1	1	1	17	
7	2	2	2	2	2	2	1	1	1	1	16	
38	2	2	1	2	1	2	2	1	2	1	16	
62	3	1	3	3	1	1	1	1	1	1	16	
104	4	4	1	1	1	1	1	1	1	1	16	
2	2	1	2	2	1	1	2	2	1	1	15	
28	2	2	2	1	3	1	1	1	1	1	15	
97	2	1	2	2	1	1	2	2	1	1	15	
102	2	1	2	2	1	1	2	2	1	1	15	
6	1	1	1	3	1	3	1	1	1	1	14	
9	3	3	1	1	1	1	1	1	1	1	14	
36	1	1	1	3	1	3	1	1	1	1	14	
82	3	3	1	1	1	1	1	1	1	1	14	
96	3	1	1	3	1	1	1	1	1	1	14	
98	1	1	1	3	1	3	1	1	1	1	14	
10	2	1	1	1	3	1	1	1	1	1	13	
60	2	3	1	1	1	1	1	1	1	1	13	
68	1	4	1	1	1	1	1	1	1	1	13	
3	1	1	1	2	1	2	1	1	1	1	12	
11	3	1	1	1	1	1	1	1	1	1	12	
76	3	1	1	1	1	1	1	1	1	1	12	
84	1	1	2	1	2	1	1	1	1	1	12	
5	2	1	1	1	1	1	1	1	1	1	11	
8	1	1	1	1	1	1	1	1	1	1	10	
25	1	1	1	1	1	1	1	1	1	1	10	
27	1	1	1	1	1	1	1	1	1	1	10	
58	1	1	1	1	1	1	1	1	1	1	10	
65	1	1	1	1	1	1	1	1	1	1	10	
67	1	1	1	1	1	1	1	1	1	1	10	
73	1	1	1	1	1	1	1	1	1	1	10	
94	1	1	1	1	1	1	1	1	1	1	10	
	154	145	138	132	130	125	97	90	89	86		

Appendix O: Guttman Scale Scores – School Curriculum

Name ID	Criterion 8 Item 74 easiest	Actual and 73	Expected School 72	Improvements 71	Due to Formal School 76	Registration 78	75	77	80	79 hardest	total score
90	4	3	4	3	4	4	3	3	4	3	35
4	4	4	2	2	4	3	4	3	3	3	32
49	4	4	4	4	4	3	4	3	1	1	32
56	3	3	3	3	3	3	3	3	4	4	32
92	4	4	3	3	3	3	4	4	1	1	30
83	4	3	3	3	3	3	3	2	3	2	29
96	4	3	2	2	4	2	3	2	4	3	29
21	3	3	3	3	3	3	3	3	1	3	28
42	3	3	3	3	3	3	3	3	1	3	28
76	3	3	4	3	3	2	3	2	2	2	27
80	3	3	3	3	2	3	3	3	2	2	27
99	3	3	3	3	1	3	1	4	3	3	27
68	3	3	3	3	3	3	3	3	1	1	26
95	3	3	3	3	3	3	3	3	1	1	26
1	3	1	3	2	4	4	2	2	3	1	25
23	2	3	2	3	2	2	3	3	2	3	25
81	2	3	3	3	2	3	2	3	2	2	25
51	2	3	3	3	2	2	2	3	1	3	24
57	4	2	2	2	3	3	2	2	2	2	24
75	3	3	3	3	3	1	3	1	2	2	24
101	3	2	3	2	3	3	2	2	2	2	24
2	3	3	3	3	2	2	2	2	2	1	23
85	3	2	2	2	2	3	2	2	3	2	23
11	3	3	3	3	2	1	2	1	3	1	22
25	3	3	3	3	3	1	3	1	1	1	22
44	2	2	2	2	2	2	2	2	3	3	22
87	3	3	2	2	2	2	2	2	2	2	22
89	3	3	3	3	1	3	1	3	1	1	22
26	4	3	3	3	1	1	1	1	3	1	21
102	3	3	2	1	3	2	3	1	2	1	21
7	2	2	2	2	2	2	2	2	2	2	20
55	2	2	2	2	2	2	2	2	2	2	20
59	2	2	2	2	2	2	2	2	2	2	20
60	2	3	3	3	1	2	3	1	1	1	20
65	3	3	2	2	1	2	1	2	2	2	20
66	2	2	3	3	1	3	1	3	1	1	20
73	3	3	3	3	1	1	1	1	2	2	20
74	2	2	2	2	2	2	2	2	2	2	20
84	2	2	2	2	2	2	2	2	2	2	20
88	2	2	2	2	2	2	2	2	2	2	20
91	2	2	2	2	2	2	2	2	2	2	20
100	3	3	1	1	1	3	1	3	2	2	20
103	2	3	2	2	2	1	3	1	2	2	20
54	2	1	2	2	2	2	2	2	2	2	19
62	3	1	3	1	3	1	1	1	3	1	18
93	2	3	1	1	2	2	2	2	1	1	17
28	1	2	1	3	1	1	3	2	1	1	16
29	3	3	3	1	1	1	1	1	1	1	16
58	4	4	1	1	1	1	1	1	1	1	16
10	2	1	3	3	1	1	1	1	1	1	15
86	2	1	2	1	2	2	1	1	2	1	15
97	2	1	2	1	2	2	1	1	2	1	15
3	1	1	1	1	1	1	1	2	1	2	12
5	2	1	2	1	1	1	1	1	1	1	12
6	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	10
9	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
36	1	1	1	1	1	1	1	1	1	1	10
50	1	1	1	1	1	1	1	1	1	1	10
67	1	1	1	1	1	1	1	1	1	1	10
78	1	1	1	1	1	1	1	1	1	1	10
82	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	10
104	1	1	1	1	1	1	1	1	1	1	10
	159	149	146	137	130	129	128	124	117	109	

Appendix P: Guttman Scale Scores –Student Learning Outcomes

Name ID	Criterion 9 Actual and Expected School Improvements Due to Formal School Registration										
	Item 82	81	84	90	83	89	86	85	88	87	
	easiest									hardest	total score
89	2	2	4	4	4	4	3	3	3	3	32
1	3	2	4	4	2	2	3	2	3	1	26
51	3	3	2	2	2	3	3	3	2	3	26
80	3	3	3	2	2	3	3	3	1	3	26
90	4	3	4	2	3	2	2	3	2	1	26
99	3	4	2	2	2	2	2	2	3	3	25
42	3	3	1	3	3	3	3	3	1	1	24
85	3	3	3	3	2	2	2	2	2	2	24
83	3	2	3	2	3	2	2	2	2	2	23
2	3	3	2	2	2	2	2	2	2	2	22
74	2	2	3	2	3	2	2	2	2	2	22
87	2	2	2	2	2	2	2	2	3	3	22
92	3	3	2	2	2	2	2	2	2	2	22
57	3	2	2	2	2	2	2	2	2	2	21
59	3	2	2	2	2	2	2	2	2	2	21
65	2	2	3	2	2	2	2	2	2	2	21
7	2	2	2	2	2	2	2	2	2	2	20
75	2	2	1	3	1	3	3	3	1	1	20
81	3	3	2	2	2	2	2	2	1	1	20
84	2	2	2	2	2	2	2	2	2	2	20
88	2	2	2	2	2	2	2	2	2	2	20
91	2	2	2	2	2	2	2	2	2	2	20
100	2	2	2	2	2	2	2	2	2	2	20
101	3	3	2	2	2	2	2	2	1	1	20
54	3	2	2	2	2	2	2	2	1	1	19
55	2	1	1	2	1	3	2	2	2	3	19
60	1	3	3	2	3	1	2	1	2	1	19
49	3	3	1	3	1	3	1	1	1	1	18
66	2	2	1	2	1	2	2	2	2	2	18
76	3	3	3	1	3	1	1	1	1	1	18
103	2	2	2	1	3	1	2	3	1	1	18
58	4	4	1	1	1	1	1	1	1	1	16
86	2	1	2	2	1	1	2	1	2	1	15
97	2	1	2	2	1	1	2	1	2	1	15
102	2	1	2	2	1	1	2	1	2	1	15
56	3	3	1	1	1	1	1	1	1	1	14
68	1	1	1	2	1	2	1	1	2	2	14
93	2	2	1	1	1	2	1	1	1	2	14
44	2	1	2	1	2	1	1	1	1	1	13
3	1	1	1	2	1	1	1	2	1	1	12
4	2	2	1	1	1	1	1	1	1	1	12
11	3	1	1	1	1	1	1	1	1	1	12
23	1	1	1	1	3	1	1	1	1	1	12
62	1	1	1	1	1	1	1	1	3	1	12
96	1	1	2	1	2	1	1	1	1	1	12
28	1	2	1	1	1	1	1	1	1	1	11
5	1	1	1	1	1	1	1	1	1	1	10
6	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	10
9	1	1	1	1	1	1	1	1	1	1	10
10	1	1	1	1	1	1	1	1	1	1	10
25	1	1	1	1	1	1	1	1	1	1	10
26	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
29	1	1	1	1	1	1	1	1	1	1	10
36	1	1	1	1	1	1	1	1	1	1	10
50	1	1	1	1	1	1	1	1	1	1	10
67	1	1	1	1	1	1	1	1	1	1	10
73	1	1	1	1	1	1	1	1	1	1	10
78	1	1	1	1	1	1	1	1	1	1	10
82	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	10
95	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	10
104	1	1	1	1	1	1	1	1	1	1	10
	126	117	109	107	105	103	103	101	97	93	

Appendix Q: Guttman Scale Scores – Level of Care for Students

Name ID	Criterion 10	Actual and Expected School Improvements Due to Formal School Registration										
	Item 98	97	92	91	96	94	100	93	95	99		
	easiest									hardest		total score
1	4	2	3	2	3	3	4	2	1	2		26
80	3	3	3	3	2	3	2	3	2	2		26
90	3	4	4	3	2	2	2	2	2	2		26
99	4	4	4	4	1	3	1	3	1	1		26
11	3	1	4	3	2	3	2	3	2	2		25
55	2	3	2	3	2	2	2	3	3	2		24
87	3	3	3	3	2	2	2	2	2	2		24
89	3	3	4	4	2	1	2	1	2	2		24
101	3	3	3	3	2	2	2	2	2	2		24
9	3	3	3	3	3	2	1	1	3	1		23
51	3	3	3	2	2	2	2	3	1	2		23
56	3	3	3	4	3	1	1	1	3	1		23
42	3	3	1	3	2	2	2	2	2	2		22
54	2	2	3	3	2	2	2	2	2	2		22
62	3	3	3	3	1	3	1	3	1	1		22
75	3	3	2	2	2	2	2	2	2	2		22
85	3	2	3	2	2	2	2	2	2	2		22
91	2	2	3	3	2	2	2	2	2	2		22
92	3	3	2	2	2	2	2	2	2	2		22
100	3	3	2	2	2	2	2	2	2	2		22
83	2	2	3	2	2	2	2	2	2	2		21
7	3	3	1	1	2	2	2	2	2	2		20
65	2	2	2	2	2	2	2	2	2	2		20
74	2	2	2	2	2	2	2	2	2	2		20
88	2	2	2	2	2	2	2	2	2	2		20
93	4	4	3	3	1	1	1	1	1	1		20
103	2	2	2	2	2	2	2	2	2	2		20
59	2	2	1	3	2	1	2	2	2	2		19
60	3	3	2	1	2	2	2	2	1	1		19
2	3	3	1	1	2	2	2	1	1	2		18
10	3	3	3	3	1	1	1	1	1	1		18
23	3	1	3	3	1	2	1	2	1	1		18
29	3	3	1	1	3	1	1	1	3	1		18
57	1	1	2	2	2	2	2	2	2	2		18
66	2	2	2	2	2	1	2	1	2	2		18
68	3	3	3	3	1	1	1	1	1	1		18
81	1	1	3	3	2	1	2	1	2	2		18
44	1	1	3	3	2	1	1	1	2	2		17
102	3	3	1	1	2	2	2	1	1	1		17
4	3	3	2	2	1	1	1	1	1	1		16
26	3	1	1	1	1	1	3	1	1	3		16
49	4	4	1	1	1	1	1	1	1	1		16
76	2	2	3	1	2	2	1	1	1	1		16
84	2	2	2	2	1	2	1	2	1	1		16
86	3	1	2	1	2	2	2	1	1	1		16
104	4	4	1	1	1	1	1	1	1	1		16
97	2	1	2	1	2	2	2	1	1	1		15
25	3	3	1	1	1	1	1	1	1	1		14
50	3	3	1	1	1	1	1	1	1	1		14
95	3	3	1	1	1	1	1	1	1	1		14
96	2	2	1	1	1	1	2	1	1	2		14
98	3	1	1	1	1	1	1	1	1	1		12
3	1	1	1	1	1	1	1	1	1	2		11
5	1	1	1	1	1	2	1	1	1	1		11
6	1	1	1	1	1	1	1	1	1	1		10
8	1	1	1	1	1	1	1	1	1	1		10
27	1	1	1	1	1	1	1	1	1	1		10
28	1	1	1	1	1	1	1	1	1	1		10
36	1	1	1	1	1	1	1	1	1	1		10
58	1	1	1	1	1	1	1	1	1	1		10
67	1	1	1	1	1	1	1	1	1	1		10
73	1	1	1	1	1	1	1	1	1	1		10
78	1	1	1	1	1	1	1	1	1	1		10
82	1	1	1	1	1	1	1	1	1	1		10
94	1	1	1	1	1	1	1	1	1	1		10
	154	142	130	125	105	104	101	99	97	97		

Appendix R: Guttman Scale Scores – Disputes & Complaints

Name ID	Criterion 11	Actual and Expected School Improvements Due to Formal School Registration										
	Item 104	103	106	105	108	107	110	109	101	102		
	easiest									hardest		total score
99	2	4	4	4	3	4	1	4	4	3		33
55	2	4	2	4	2	4	2	3	4	2		29
56	3	3	3	3	3	3	3	3	1	1		26
92	3	3	2	1	3	3	3	3	2	3		26
4	3	3	3	3	2	2	3	3	1	1		24
103	3	3	2	2	3	3	2	2	2	2		24
1	3	1	4	2	3	1	3	2	1	3		23
85	3	2	2	2	3	2	3	2	2	2		23
101	3	3	3	3	3	2	1	1	2	2		23
42	3	3	2	2	2	2	2	2	2	2		22
80	2	3	2	3	2	2	2	2	2	2		22
88	3	3	2	2	2	2	2	2	2	2		22
90	2	2	3	3	2	2	2	2	2	2		22
91	3	3	2	2	2	2	2	2	2	2		22
59	2	2	2	2	2	2	2	2	2	2		20
68	4	4	3	3	1	1	1	1	1	1		20
74	2	2	2	2	2	2	2	2	2	2		20
75	2	2	2	2	2	2	3	3	1	1		20
76	2	2	2	2	2	2	2	2	2	2		20
87	2	2	2	2	2	2	2	2	2	2		20
89	4	4	3	3	1	1	1	1	1	1		20
100	3	3	2	2	2	2	1	1	2	2		20
11	4	3	3	3	1	1	1	1	1	1		19
54	2	2	2	2	2	1	2	1	2	2		18
60	3	3	3	3	1	1	1	1	1	1		18
81	3	3	1	1	2	2	1	1	2	2		18
95	3	3	3	3	1	1	1	1	1	1		18
29	3	3	3	1	1	1	1	1	1	1		16
66	2	2	1	1	2	2	2	2	1	1		16
51	1	1	2	2	1	1	2	1	2	2		15
102	3	3	1	1	1	1	2	1	1	1		15
7	2	2	2	2	1	1	1	1	1	1		14
9	3	3	1	1	1	1	1	1	1	1		14
10	3	3	1	1	1	1	1	1	1	1		14
25	3	3	1	1	1	1	1	1	1	1		14
50	3	3	1	1	1	1	1	1	1	1		14
57	2	2	2	2	1	1	1	1	1	1		14
65	2	2	2	2	1	1	1	1	1	1		14
73	1	1	1	1	2	2	2	2	1	1		14
93	3	3	1	1	1	1	1	1	1	1		14
97	3	1	1	1	2	1	2	1	1	1		14
98	3	3	1	1	1	1	1	1	1	1		14
83	1	1	2	2	1	1	1	1	1	1		12
96	1	1	3	1	1	1	1	1	1	1		12
2	2	1	1	1	1	1	1	1	1	1		11
3	1	1	1	1	1	1	1	1	1	1		10
5	1	1	1	1	1	1	1	1	1	1		10
6	1	1	1	1	1	1	1	1	1	1		10
8	1	1	1	1	1	1	1	1	1	1		10
23	1	1	1	1	1	1	1	1	1	1		10
26	1	1	1	1	1	1	1	1	1	1		10
27	1	1	1	1	1	1	1	1	1	1		10
28	1	1	1	1	1	1	1	1	1	1		10
36	1	1	1	1	1	1	1	1	1	1		10
44	1	1	1	1	1	1	1	1	1	1		10
49	1	1	1	1	1	1	1	1	1	1		10
58	1	1	1	1	1	1	1	1	1	1		10
62	1	1	1	1	1	1	1	1	1	1		10
67	1	1	1	1	1	1	1	1	1	1		10
78	1	1	1	1	1	1	1	1	1	1		10
82	1	1	1	1	1	1	1	1	1	1		10
84	1	1	1	1	1	1	1	1	1	1		10
86	1	1	1	1	1	1	1	1	1	1		10
94	1	1	1	1	1	1	1	1	1	1		10
104	1	1	1	1	1	1	1	1	1	1		10
	135	133	113	109	97	94	94	92	88	88		

Appendix S: Guttman Scale Scores – Legal Compliance

Name ID	Criterion 12	Actual and Expected School Improvements Due to Formal School Registration									
	Item 116	115	112	118	117	111	129	114	119	113	
	easiest									hardest	total score
89	4	4	3	4	4	3	4	3	4	3	36
90	4	3	4	4	3	4	4	3	3	3	35
80	4	3	3	3	3	3	3	3	3	3	31
23	3	3	3	3	3	3	3	3	3	3	30
26	3	3	3	3	3	3	3	3	3	3	30
42	3	3	3	3	3	3	3	3	3	3	30
44	3	3	3	3	3	3	3	3	3	3	30
49	4	4	3	3	3	3	4	1	4	1	30
56	3	3	3	3	3	3	3	3	3	3	30
62	3	3	3	3	3	3	3	3	3	3	30
65	3	3	3	3	3	3	3	3	3	3	30
68	3	3	3	3	3	3	3	3	3	3	30
75	4	4	3	1	1	3	4	3	4	3	30
92	3	3	3	3	3	3	3	3	3	3	30
100	3	3	3	3	3	3	3	3	3	3	30
76	4	3	4	2	2	3	3	3	2	3	29
101	3	3	3	3	3	2	3	3	3	3	29
81	3	3	3	3	3	3	3	2	3	2	28
60	3	3	3	3	3	3	3	1	4	1	27
83	3	3	3	4	3	3	3	1	3	1	27
9	3	3	3	1	1	3	3	3	3	3	26
11	3	3	3	3	3	3	1	3	1	3	26
1	3	1	3	3	2	2	4	4	1	2	25
85	3	2	3	3	2	2	3	3	2	2	25
99	4	4	1	3	4	1	1	3	1	3	25
7	3	3	3	2	2	3	2	2	2	2	24
29	3	3	1	3	3	1	3	3	3	1	24
50	4	4	3	1	1	3	3	1	3	1	24
87	4	4	2	2	2	2	2	2	2	2	24
88	3	3	2	3	3	2	2	2	2	2	24
103	2	2	2	2	2	2	3	3	3	3	24
93	3	3	3	3	4	3	1	1	1	1	23
4	3	3	1	3	3	1	1	3	1	3	22
51	3	3	3	2	3	1	1	3	1	2	22
73	3	4	1	3	3	1	3	1	1	1	21
74	2	2	2	2	2	3	2	2	2	2	21
55	2	2	2	2	2	2	2	2	2	2	20
59	2	2	2	2	2	2	2	2	2	2	20
91	2	2	3	2	2	3	2	1	2	1	20
10	2	1	3	1	1	3	1	3	1	3	19
3	2	2	2	2	2	2	1	2	1	2	18
36	3	3	1	1	1	1	1	3	1	3	18
54	2	2	2	2	2	2	2	1	2	1	18
95	3	3	1	3	3	1	1	1	1	1	18
2	1	1	3	1	1	3	1	2	1	2	16
97	2	1	2	2	1	1	2	2	1	1	15
28	1	3	1	1	1	3	1	1	1	1	14
58	1	1	1	3	3	1	1	1	1	1	14
66	1	1	2	2	2	2	1	1	1	1	14
82	1	1	3	1	1	3	1	1	1	1	14
96	1	1	1	2	2	1	2	1	2	1	14
57	1	1	2	2	1	1	1	1	1	1	12
86	1	1	2	2	1	1	1	1	1	1	12
102	1	1	2	1	1	1	1	1	1	1	11
5	1	1	1	1	1	1	1	1	1	1	10
6	1	1	1	1	1	1	1	1	1	1	10
8	1	1	1	1	1	1	1	1	1	1	10
25	1	1	1	1	1	1	1	1	1	1	10
27	1	1	1	1	1	1	1	1	1	1	10
67	1	1	1	1	1	1	1	1	1	1	10
78	1	1	1	1	1	1	1	1	1	1	10
84	1	1	1	1	1	1	1	1	1	1	10
94	1	1	1	1	1	1	1	1	1	1	10
98	1	1	1	1	1	1	1	1	1	1	10
104	1	1	1	1	1	1	1	1	1	1	10
	155	150	144	142	138	137	134	130	126	123	