Facilitating Change in Australian Schools: Applying a Business Quality Improvement Model

Jane Kovacs

Thesis submitted in partial fulfilment of the requirements for the degree of Professional Doctorate in Business Administration

Faculty of Business and Enterprise
Swinburne University of Technology
2009
Abstract

Industry learned many years ago of the need to develop the capacity to continuously improve productivity, performance and responsiveness in order to grow competitive advantage, and to succeed in an environment where change remains the only constant.

Each year our State and Federal governments invest millions of dollars in strategies aimed at improving our school education system. This is in response to a growing awareness by key stakeholders of the urgent need for this sector to meet the demands of a changing society. Whilst Australia currently ranks among the world’s leading nations in terms of the performance of our schools, close examination of the data reveals that a higher proportion of our students are falling behind compared to other countries, and that there has been little improvement over the last decade. Other worrying indicators include the declining morale of educators, and the increasing exodus of students from the public to private school system.

Between the years 1997 and 2004, 138 Victorian State schools took part in the Quality in Schools program, an initiative of the Australian Quality Council. The purpose of the two-year program was to develop educator and administrator capacity in the thinking, strategies and methods of Quality Improvement. The Quality Improvement approach is based on the work of W. Edwards Deming, and proven over many years to be effective in bringing about significant and sustainable improvement in industry.

The purpose of this study was to investigate the impact of the Quality in Schools program, and whether applying the Quality Improvement approach has improved school performance.
The study found that the Quality in Schools program has led to an increased understanding and application of the Quality Improvement philosophy and methods. Participating schools showed greater improvement of performance in several key areas including staff satisfaction and student learning outcomes for reading, writing and mathematics. They also showed a greater rate of improvement for combined student learning outcomes compared to like schools.

Importantly, the program has led to a change in mindset with respect to the way in which schools approach improvement. Furthermore, the schools that participated in the program continue to apply the approach which appears resilient to a number of challenges usually associated with the failure or stalling of change interventions.

The study reinforces the effectiveness of the design elements of the Quality in Schools program. It is suggested that these elements be used as the basis of, and to inform, the design of future interventions. The research has also resulted in the development of an evaluative methodology that can be adapted to assess the impact of other improvement strategies and to determine the return on the investment of time, effort and resources.

In conclusion, the research demonstrates that the Quality Improvement model, developed and proven in industry, leads to improved school performance. It demonstrates the importance and potential of ongoing dialogue and the sharing of learning between industry and education. This is critical if our public school education system is to continue to be relevant and of value in shaping the future success of our country.
Acknowledgements

I deeply grateful to the following wonderful people:

- My supervisor Denny Meyer, for her many, many words of encouragement and positive feedback (which is so motivating and important for a learner!), her expert tutoring (helping me to overcome my ‘oath of statistical abstinence!’), and for coaching me to the finishing line.

- Michael King, my (Quality and quality!) mentor, business partner and friend – none of this would have eventuated without you.

- Susan Long, my supervisor ‘in the early days’, for helping me to get started, and the staff from Swinburne University including Chris Christodoulou and Chris Selvarajah for their help and support.

- The principals, staff and students (who played such an important role in producing the data!) of the schools that so kindly agreed to take part in (yet another) study! I greatly admire the work you do, your stamina (to survive the current system) and dedication, and wish you well with your continued improvement efforts.

- Lisa Black, Robert Brookes, Fred Clarke, Sue Conquest, Anne Cunniffe, Don King and Keith Woodward of the Victorian Department of Education and Early Childhood Development, for their interest and support with obtaining the ‘sample’ of schools.

- My personal librarian (and sister-in-law), Jenny Lamos!

- And of course, my fabulous husband, family and friends for believing in, supporting and encouraging me (no matter what!!).
Declarations

I declare that this dissertation does not contain:

• Any material that has been accepted for the award to the candidate of any other degree or diploma

• Any material previously published or written by another person except where due reference has been made in the text.

.................................................. Jane Kovacs
Table of Contents

Abstract .............................................................................................. iii
Acknowledgements ........................................................................... v
Declarations ...................................................................................... vi
Table of Contents ............................................................................ vii
Table of Figures ................................................................................ ix
Table of Tables ................................................................................ xiii

Chapter One  Introduction .............................................................. 1
  The Need to Improve Education ..................................................... 2
  Quality Improvement .................................................................... 7
  Quality in Schools: The Intervention ............................................. 10
  The Research Goals .................................................................... 19
  Contribution of the Research ...................................................... 21
  Thesis Outline ........................................................................... 22
  Conclusion ................................................................................ 23

Chapter Two  Literature Review .................................................... 25
  Introduction ............................................................................. 25
  The Australian School Education System .................................. 26
  The Need to Improve School Education .................................... 29
  Efforts to Improve Australian School Education ....................... 59
  Quality Improvement in Industry .............................................. 67
  Quality Improvement in Schools and Classrooms .................... 81
  Quality Improvement - the Barriers ......................................... 98
  Conclusion ............................................................................ 101

Chapter Three  Methodology ....................................................... 103
  Introduction ............................................................................ 103
  The Research Process ............................................................. 104
  The Theoretical or Conceptual Framework ................................ 106
  The Research Questions and Hypotheses ................................. 108
  Research Design ...................................................................... 110
  Primary Data Collection .......................................................... 134
  Secondary Data Collection ....................................................... 138
  The Control Group Sample ....................................................... 138
  Data Analysis .......................................................................... 140
  Conclusion ............................................................................ 148
Chapter Four  Presentation and Analysis of Findings ......................... 151
  Introduction .............................................................................. 151
  Research Question/Hypothesis 1: Deployment of Quality Improvement
  Quality Schools versus Control Schools .............................................. 152
  Research Question/Hypothesis 2: Deployment of Quality Improvement
  Impact upon School Performance ..................................................... 160
  Research Question/Hypothesis 3: Quality in Schools Participation: Impact on
  School Improvement .................................................................... 167
  Research Question/Hypothesis 4: Challenges of School Improvement ......... 190
  Findings Relating to Sample Size ..................................................... 207
  Conclusion ................................................................................ 208

Chapter Five  Discussion .......................................................... 217
  Introduction .............................................................................. 217
  Discussion of the Research Findings: the Research Questions .............. 217
  Discussion of the Research Findings: Future Application of the Research
  Methodology .............................................................................. 226
  Discussion of the Research Findings: the Literature Review ................... 228

Chapter Six  Conclusions and Implications ..................................... 233
  Introduction .............................................................................. 233
  Conclusions with Respect to the Research Findings ............................. 233
  Implications of the Research .................................................................... 237
  Limitations of the Study ........................................................................ 250
  Contribution of the Research .................................................................... 256
  Recommendations ............................................................................. 263
  Conclusion ................................................................................ 266

References .......................................................................... 269

Appendix 1 Ethics Approval ....................................................... 287
Appendix 2 Victorian Department of Education and Training Approval ... 291
Appendix 3 Primary Data Collection Instrument .................................... 295
Appendix 4 Permission Form ..................................................... 313
Appendix 5 School Data Summary Spreadsheets ............................. 321
## Table of Figures

| Figure 1.1 | The Increasing Rate of Technological Change | 2 |
| Figure 1.2 | Contrasting Present-day Schools with those of the Future | 4 |
| Figure 1.3 | Deming’s System of Profound Knowledge | 8 |
| Figure 1.4 | The Twelve Principles of Contemporary Quality | 11 |
| Figure 1.5 | Quality in Schools Purpose | 13 |
| Figure 1.6 | Quality in Schools Vision | 13 |
| Figure 1.7 | Quality in Schools Objectives | 13 |
| Figure 2.1 | Attitudes to School: Decreasing Student Engagement Over Time (Kindergarten to Year 11) | 41 |
| Figure 2.2 | Student Retention Rates for Australian Schools (2001-2006) | 42 |
| Figure 2.3 | Students Gaining Year 12 Certificates (2001-2005) | 42 |
| Figure 2.4 | Unemployment Rates of Australian Adults (2002) | 43 |
| Figure 2.5 | Percentage of Year 7 Students Achieving the National Benchmark for Reading (2001-2007) | 45 |
| Figure 2.6 | Percentage of Year 7 Students Achieving the National Benchmark for Writing (2001-2007) | 45 |
| Figure 2.7 | Percentage of Year 7 Students Achieving the National Benchmark for Numeracy (2001-2007) | 46 |
| Figure 2.8 | Increasing Variation in Mathematics Achievement over the Years of Schooling | 46 |
| Figure 2.9 | Mean Benchmarks Victorian Students Reading (2002-2005) | 53 |
| Figure 2.10 | Growth in Benchmark Scores Victorian Students Reading (2002-2005) | 54 |
| Figure 2.11 | Proportional Benchmarks Victorian Students Reading (2002-2005) | 55 |
| Figure 2.12 | Mean Benchmarks Victorian Students Writing (2002-2005) | 55 |
| Figure 2.13 | Growth in Benchmark Scores Victorian Students Writing (2002-2005) | 56 |
| Figure 2.14 | Proportional Benchmarks Victorian Students Writing (2002-2005) | 56 |
| Figure 2.15 | Mean Benchmarks Victorian Students Mathematics (2002-2005) | 57 |
| Figure 2.16 | Growth in Benchmark Scores Victorian Students Mathematics (2002-2005) | 57 |
| Figure 2.17 | Proportional Benchmarks Victorian Students Mathematics (2002-2005) | 58 |
| Figure 2.18 | Progress in Key Learning Areas Victorian Primary School Students (2003-2005) | 59 |
Figure 4.2  Column Chart - Deployment of Quality Improvement: Principle Self-assessment Scores Quality and Control Schools .......... 155
Figure 4.3  Column Chart - Deployment of Quality Improvement: Comparison of Quality and Control Schools Total Self-assessment Scores .. 156
Figure 4.4  Area Chart - Depth of Deployment of Quality Improvement Principles by Quality Schools ........................................ 157
Figure 4.5  Error Bar Plot - Depth of Deployment of Quality Improvement Principles by Quality Schools; Means with 95% Confidence Intervals ................................................................. 157
Figure 4.6  Area Chart - Depth of Deployment of Quality Improvement Principles by Control Schools ........................................ 158
Figure 4.7  Errors Bar Plot - Depth of Deployment of Quality Improvement Principles by Control Schools; Means with 95% Confidence Intervals ................................................................. 159
Figure 4.8  Differences in Mean Principle Self-assessment Scores of Quality and Control Schools ................................................... 159
Figure 4.10 Scatter Plot - Deployment of Quality Improvement: Total Self-assessment Score (2008) and Performance Staff Satisfaction (2005) ................................................................. 163
Figure 4.11 Interaction Chart: Quality and Control School Improvement Reading (KPI1) 2003 to 2005 ........................................ 171
Figure 4.12 Interaction Chart: Quality and Control School Improvement Writing (KPI2) 2003 to 2005 ........................................ 172
Figure 4.13 Interaction Chart: Quality and Control School Improvement Number (KPI3) 2003 to 2005 ........................................ 173
Figure 4.14 Interaction Chart: Quality and Control School Improvement AIM Test Reading (KPI4) 2003 to 2005 ........................................ 174
Figure 4.15 Interaction Chart: Quality and Control School Improvement AIM Test Number (KPI5) 2003 to 2005 ........................................ 175
Figure 4.16 Interaction Chart: Quality and Control School Improvement Parent Satisfaction (KPI6) 2003 to 2005 .............................. 176
Figure 4.17 Interaction Chart: Quality and Control School Improvement Staff Satisfaction (KPI7) 2003 to 2005 .............................. 177
Figure 4.18 Interaction Chart: Quality and Control School Improvement: Combined Student Achievement (KPIs 1 to 5) 2003-2005 .... 179
Figure 4.19 Interaction Chart: Quality and Like School Improvement Reading (KPI1) 2003 to 2005................................. 182
Figure 4.20 Interaction Chart: Quality and Like School Improvement Writing (KPI2) 2003 to 2005............................................. 183
Figure 4.21 Interaction Chart: Quality and Like School Improvement Number (KPI3) 2003 to 2005................................. 184
Figure 4.22 Interaction Chart: Quality and Like School Improvement AIM Test Reading (KPI4) 2003 to 2005................................. 185
## Table of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>Quality in Schools Program Overview</td>
<td>16</td>
</tr>
<tr>
<td>Table 1.2</td>
<td>Quality in Schools - Participating Schools</td>
<td>17</td>
</tr>
<tr>
<td>Table 2.1</td>
<td>Factors shown to Enhance Intrinsic Motivation</td>
<td>35</td>
</tr>
<tr>
<td>Table 2.2</td>
<td>Generational Cultures</td>
<td>39</td>
</tr>
<tr>
<td>Table 2.3</td>
<td>Generational Teaching and Motivational Stimuli</td>
<td>39</td>
</tr>
<tr>
<td>Table 2.4</td>
<td>Factors Influencing Student Academic Success</td>
<td>47</td>
</tr>
<tr>
<td>Table 2.5</td>
<td>Australian Achievement of Tertiary Qualification (2007)</td>
<td>49</td>
</tr>
<tr>
<td>Table 2.6</td>
<td>Contrasting Traditional Management, School and Classroom Methods with those of Quality Improvement</td>
<td>78</td>
</tr>
<tr>
<td>Table 3.1</td>
<td>Research Questions and Hypotheses</td>
<td>109</td>
</tr>
<tr>
<td>Table 3.2</td>
<td>Summary of Measures: School Key Performance Indicators used in the Research</td>
<td>118</td>
</tr>
<tr>
<td>Table 3.3</td>
<td>School Population and Sample</td>
<td>129</td>
</tr>
<tr>
<td>Table 3.4</td>
<td>Make up of Quality School Self-assessment Teams</td>
<td>136</td>
</tr>
<tr>
<td>Table 3.5</td>
<td>Analyses Performed to Test the Impact of Various School Challenges on Deployment of the Quality Improvement Approach</td>
<td>148</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Results of Analysis: Comparing Quality Improvement Deployment: Self-assessment Scores Quality and Control Schools</td>
<td>154</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Correlation Analysis Results: Deployment of Quality Improvement: Total Self-assessment Scores (2008) and KPI Performance (2005)</td>
<td>162</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Correlational Analysis Results: Deployment of Quality Improvement: Total Self-assessment Scores (2008) and Primary School Student Learning Outcome Indicators (2005)</td>
<td>166</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>MANOVA Analysis Results: Quality and Control School Improvement (2003 to 2005)</td>
<td>169</td>
</tr>
<tr>
<td>Table 4.6</td>
<td>Mean Value Comparison: Key Performance Indicators for Quality and Control Schools (2003-2005)</td>
<td>170</td>
</tr>
<tr>
<td>Table 4.7</td>
<td>Number of Schools in Sample of Like School Groups</td>
<td>180</td>
</tr>
<tr>
<td>Table 4.8</td>
<td>MANOVA Analysis Results: Differences in Improvement Quality and Like Schools 2003 to 2005</td>
<td>180</td>
</tr>
<tr>
<td>Table 4.9</td>
<td>Comparison of Means for Improvement in Quality and Like Schools 2003 to 2005</td>
<td>181</td>
</tr>
<tr>
<td>Table 4.10</td>
<td>Analysis Results: Effect of Change in Leadership on Total Self-assessment Score</td>
<td>199</td>
</tr>
<tr>
<td>Table 4.11</td>
<td>Results of Analysis: Effect of School Size on Total Self-assessment Score</td>
<td>201</td>
</tr>
</tbody>
</table>
Table 4.12  Results of Analysis: Effect of Number of Years Deployment on Total Self-assessment Score .............................................. 203
Table 4.13  Results of Analysis: Effect of Changes to Team Members on Total Self-assessment Score .............................................. 205
Table 5.1  Summary of the Research Questions and Hypotheses ........... 218
Table 6.1  Summary of the Research Questions, Hypotheses and Findings… 239
Chapter One

Introduction

The purpose of this chapter is to discuss the aim of the study and provide the context for, background information relating to, and an overview of, the research undertaken. The chapter:

• argues the need to improve school education
• outlines the Quality Improvement approach as it applies to improving organisational performance
• describes the Quality in Schools intervention the study is aimed at evaluating the impact of
• discusses the research questions, the contribution the research is intended to make, and the scope of the study
• provides an overview of the content of the thesis.
The Need to Improve Education

A Changing World

Business and management literature has, over recent decades, been consistent in its emphasis of the importance of organisations growing their flexibility, and adapting and adopting new ways of thinking (Cooper and Kleinschmidt 2001, Higgins 1995, Mintzberg 1998, Ryan and Oestreich 1998, Scholtes 1998).

To sustain competitive advantage in a global market place, deliver increasing value for diverse stakeholders, and ensure long-term viability and success, organisations must hone their capacity for rapid transformation. To adapt and respond to a constantly changing business environment, organisations must be capable of continuous and relentless breakthrough improvement and innovation.

The increasing rate of technological change is one such challenge facing organisations. Knowles in Tribus (2001, p1) used the following diagram to illustrate the increasing rate of technological change faced by humans during their lifetime over the last two centuries (Figure 1.1).

![Figure 1.1 The Increasing Rate of Technological Change](image)

With growing organisational change, the employability of an individual with respect to their capacity to learn is seen as increasingly critical to their success, wellbeing and quality of life. Our children must leave the education system well equipped with the skills and aptitude for a life of continuous learning and improvement (Porter 1987, Scholtes 1998, Stoll et al. 2003, UNESCO 1995).
The Changing Role of School Education

Our education system plays a critical role in the development of students as future employees of organisations and community members. Our schools therefore must be capable of preparing our youth for the roles of citizen and employee in this changing society. Schools, like businesses, must become highly responsive organisations, adapting to the demands associated with constant change and its social implications.

As the traditional roles and structures of community and family change, there is increasing pressure upon our schools to not only improve student learning outcomes, but to take on more and more responsibility for teaching the values and social competencies associated with a range of significant societal issues.

“...Schools are increasingly expected to compensate for the shifts in society and family that affect children: changes in family structure, rapidly shifting trends in television and popular culture, commercialism without end, poverty, violence, child abuse, teenage pregnancy, substance abuse and incessant social upheaval…” (Senge 2000, pp9-10).

The current education system has evolved based on the needs of a growing industrial age, characteristic of a nineteenth century society. Now, just as other organisations have had to respond to the changing demands of the twenty-first century, so too must education. Much has been written about the outdated nature and struggle of the current system of education, and the need for urgent reform to meet the increasing demands of this dynamic age (Caldwell and Hayward 1998, Jenlink (Ed.) 1996, Labaree 2007, Marzano 2003, Meier 2002, Senge 2000).

“...We’ve invented schools that present at best, a caricature of what kids need to grow up to be effective citizens, skilful team members, tenacious and ingenious thinkers, or truth seekers. They sit, largely passively, through one after another different subject matter in no special order of relevance, directed by people they can’t imagine becoming, much less would like to become. The older they get the less like ‘real life’ their schooling experience is – and the more disconnected and fractionated they become…” (Meier 2002, p12).
“...There is a sense of crisis in public education in much of the western world. It is a crisis that extends to virtually every aspect of schooling. That it is a crisis of the West is evident in study after study that shows that schools in the East are at the top of the heap...” (Caldwell and Hayward 1998, p1)

Jenlink (1996 p5), in contrasting the essential characteristics of schools of the future with the present-day school highlights the magnitude of the change required in education (Figure 1.2).

<table>
<thead>
<tr>
<th>20th Century Schools</th>
<th>21st Century Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory model</td>
<td>Learning community model</td>
</tr>
<tr>
<td>Learn WHAT to learn</td>
<td>Learn HOW to learn</td>
</tr>
<tr>
<td>Teaching as telling. Information dissemination by the teacher</td>
<td>Teaching as facilitating learning. Socially constructed knowledge by students and teachers</td>
</tr>
<tr>
<td>Closed boundaries for learning</td>
<td>Open boundaries for learning</td>
</tr>
<tr>
<td>Individualism</td>
<td>Collectivism and community</td>
</tr>
<tr>
<td>The teacher poses problems, and defines the learning context</td>
<td>Students collaborate with peers and teachers to pose problems. There is co-responsibility for creating the learning context</td>
</tr>
<tr>
<td>Convergent problem solving - one best way</td>
<td>Divergent and convergent problem solving</td>
</tr>
<tr>
<td>Competitive learning environment, win-lose</td>
<td>Cooperative and collaborative learning environment, win-win</td>
</tr>
<tr>
<td>Parents are external to the formal learning relationship and process</td>
<td>Parents as learning team members</td>
</tr>
</tbody>
</table>

**Figure 1.2  Contrasting Present-day Schools with those of the Future**

Improving School Education

The improvement of education continues to be a major strategic imperative of Australian state and federal governments. It is associated with the annual investment of significant government funding to better physical resources, increase the use of technology and improve the processes of teaching and learning in our schools.


The means by which these outcomes are to be realised appear less well articulated, with schools left to devise how these improvements might be achieved. It appears that there is an assumption that articulating the required outcomes will be sufficient to affect the change needed, and schools are deliberately withholding their best efforts to improve!

At any one time, there are many improvement initiatives being undertaken by schools. In much the same way as with the corporate world, schools have been subjected to the ongoing imposition of ‘fad-like’ activity involving considerable time, effort and creating mounting frustration as improvement is seldom realised (Fullan 1997, Jenkins 2003).

“…Education is at the same place the automobile industry was several years ago. Every year a new model was introduced, but the car was essentially unchanged. A new chrome ornament, plus a redesigned taillight, plus pin striping, does not equal improvement. These are changes – maybe appealing changes – but nevertheless, merely changes. Likewise, education goes from change to change to change, with little evidence of improvement…” (Jenkins 2003, p7)

The current literature however provides little evidence of evaluation with respect to the impact of many of these initiatives. There is limited data available to show ‘what actually works’ to improve school performance in a systemic way, the contribution made to strategic reform, and perhaps most importantly, the return on a significant investment of time, money and effort.

Since the mid 1980’s, there has been great interest in school effectiveness and improvement among researchers, government and policy makers. Much has also been written on the difficulty of affecting change in schools. It appears that there is much to learn about the process for leading and deploying successful change in this important sector (Bennett and Harris 2005, Brown and Moffett 1999, Fullan 1997, Jenkins 2003, Marzano 2003, Senge 2000, 2007, Stoll et al. 2003, Stoll and Myers 1998).

**Quality Improvement in Schools**

Over the past two decades a growing number of schools around the world have been exploring how they might benefit from the lessons learned by the business community in improving quality, productivity and performance, and in responding to and managing change (Cokeley et al. 2007, Jenkins 1993, Schenkat 1993).

Between 1997 and 2004, one-hundred-and-thirty-eight (138) Victorian state schools took part in a program based upon a business model. The approach had been proven to positively impact performance and productivity in industry. The program - *Quality in Schools* - was developed by the Australian Quality Council in consultation with the Victorian Department of Education.

The aim of *Quality in Schools* was to develop the capacity of educators and administrators in applying the theory, methods and tools of *Quality Improvement*, to affect continuous improvement in the school and its classrooms. Also, to develop the capabilities of our children, so that they might enter the workforce equipped with the skills necessary to effect improvement in their future lives.

The program was designed to improve the quality of school life for all members of the school community, and empower students to take on an increased understanding of, and responsibility for, their learning (AQC 2002a).

This study aims to evaluate the depth and endurance of adoption, and the impact of this program on school performance.
The Quality in Schools program was based upon the general philosophy and methods of the Quality Improvement model described in the following section.

**Quality Improvement**

The philosophy of Quality Improvement has been evolving for over fifty years, drawing on many disciplines including systems theory, psychology, statistics, and epistemology. It has had many labels over this time, including Statistical Process Control (SPC), Total Quality Control (TQC), Total Quality Management (TQM), Kaizen, Best Practice and more recently, Business or Performance Excellence, Six Sigma and the Lean Enterprise (Deming 1967, 1982, 1986, 1994, EFQM 2003, Imai 1986, Kano 1984, NIST 2008, SAI Global 2007, 2008).

The advent of Quality Improvement occurred in the early 1950s when W. Edwards Deming, a statistician, was assigned by the US government to assist with the rebuilding of the post-war Japanese economy. What Deming taught the key players of Japanese industry began the evolution of his theory of Quality Management. Within five years his teachings had had great impact, with Japanese industry growing to establish a dominant position in the global marketplace (Deming 1982, Latzko and Saunders 1995).

The theory of Quality Improvement is conceptualised by W. Edwards Deming’s System of Profound Knowledge comprising four factors critical to achieving and sustaining organisational improvement (illustrated in Figure 1.3). Deming described the System of Profound Knowledge as a framework for applying best efforts to the right tasks. The elements of the framework are outlined on the following pages (Aguayo 1990, Deming 1994, King 2001, Latzko and Saunders 1995).

**Appreciation for a System**
- Understanding the organisation as a system of interdependent components that work together to achieve an aim
- Viewing work as a process and improving processes to improve the outcomes they deliver. People work within these systems and processes
- Establishing clarity and constancy of a system’s purpose and vision, and working ON the system as well as working IN it

**Understanding of Psychology**

**Theory of Knowledge**

**Theory of Variation**

*Figure 1.3 Deming’s System of Profound Knowledge*
• Quality and value are determined by the organisation’s customers. They make decisions regarding products and services based upon their perceptions. Organisations must create products and services that meet the needs of their customers at a price they are willing to pay.

• Managing key stakeholder relationships.

**The Theory of Variation (Statistical Thinking):**

• Working to minimise the variation in systems and processes results in improved outcomes and reduces frustration, waste and rework.

• Using data generated through system and process performance measurement improves decision-making and action.

**The Theory of Knowledge (Epistemology):**

• Planning for improvement. Improvement rarely occurs by chance.

• Using prediction and data to create knowledge.

• Using methods and tools to work collaboratively in teams to solve problems, collect and analyse data, make decisions and improve systems and processes.

**Understanding Psychology (Motivation):**

• People working together in constructive relationships to achieve purpose and improvement.

• Working together to improve processes and systems to prevent frustration and remove other barriers that impact on productivity and performance. People are inherently good and are intrinsically motivated to do a good job. Processes and systems drive performance and behaviour. The people who work in the process are those most knowledgeable about how to improve it.

• Encouraging leadership at all levels within the organisation.

• Leaders of organisations understanding the psychological implications of their actions and the processes and systems of the organisation. They should work to diminish focus on extrinsic motivation (reward and punishment).
Quality in Schools: The Intervention

The Quality in Schools program was developed and deployed by the Australian Quality Council (AQC) between 1997 and 2005. The program was initiated with a view to educate and support schools through a process of adoption and adaptation of the business Quality Improvement theory, tools and methods developed in industry. It was designed as a two-year longitudinal intervention involving professional development sessions and support visits to school sites.

The Australian Quality Council

The AQC was established in the early 1980’s after a Senate enquiry identified the need for a unified approach in supporting the quality improvement efforts of Australian industry.

The organisation was recognised by the Commonwealth as the peak body for Business Excellence and was responsible for administering the Australian Business Excellence Awards. Its purpose was: “To accelerate organisational improvement through the adoption of management principles and practices reflected in the Australian Business Excellence Framework” (AQC 2002a).

The AQC functioned as a small, non-government, self-funding, membership-based, not-for-profit organisation. Members included large iconic Australian corporates, such as BHP, Western Mining and Telstra. Its work included publication and review of the Australian Business Excellence Framework, organisational self-assessment, training and consultancy support.

Similar organisations exist in over 170 countries worldwide, using similar frameworks to drive their improvement support efforts. In the United States, the Malcolm Baldrige Criteria for Excellence is used by the National Institute of Standards and Technology, and in Europe, the European Foundation for Quality Excellence Model is administered by the European Foundation for Quality Management (EFQM 2003, NIST 2008).
The AQC used the theory and methods developed by Deming and others to distil what they called the *Twelve Principles of Contemporary Quality* (Figure 1.4) (AQC 2002 Section 3 p4). The principles reflect the *Quality Improvement* theory and form the basis of the *Business Excellence Framework*. They also encapsulate the theory upon which the *Quality in Schools* intervention was based (AQC 2002a, 2002b, SAI Global 2007).

**The Twelve Principles of Contemporary Quality**

1. Clear direction allows organisational alignment and a focus on the achievement of goals
2. Mutually agreed plans translate organisational direction into actions
3. Quality and value are determined by the client
4. To improve the outcome, improve the system and its processes
5. All people work in a system, outcomes are improved when people work on the system
6. Effective use of facts, data and knowledge leads to improved decisions
7. All systems and processes exhibit variability, which impacts upon predictability and performance
8. The potential of an organisation is realised through its people’s enthusiasm, resourcefulness and participation
9. Continuous improvement and innovation depend upon continual learning
10. The organisation’s actions to ensure a clean, safe, fair and prosperous society enhance the perception of its value to the community
11. Sustainability is determined by an organisation’s ability to create and deliver value for all stakeholders
12. Senior leadership’s constant role modelling of these principles, and the creation of a supportive environment, are necessary for the organisation to reach its potential

**Figure 1.4 The Twelve Principles of Contemporary Quality**

In early 2002 the AQC was taken over by SAI Global. SAI Global has continued on with the work of the AQC since this time.
Program Purpose, Vision and Objectives

Prior to commencement of their quality improvement work with schools in 1998, AQC experience had been limited to public and private sector businesses. In the mid 1990’s, the AQC identified an opportunity to significantly increase organisational understanding and application of Quality Improvement, by developing these skills and capacities in school-age students.

In 1996, the Victorian Department of Education agreed to fund a pilot of 28 schools to undertake a training program with the AQC, commencing in 1997 (AQC 2002a). The aim of the two-year Quality in Schools intervention was to introduce educators and administrators to the theory, practices and tools of continuous improvement, to help establish a culture of continuous improvement across the school.

The pilot schools worked with the AQC to translate what had been developed for business, by business, into something meaningful and relevant for application to the school and its classrooms.

The stated Purpose and Vision of Quality in Schools is shown in Figures 1.5 and 1.6 (AQC 2002a section 1 p5).

The Purpose and Vision of the Quality in Schools program was translated as “working with school communities” (principals, teachers, administrators, students, parents, etc.) to achieve the objectives shown in Figure 1.7.

Program Design

The program design was based on an approach used for over ten years in the corporate sector to facilitate business improvement across a variety of industries, both private and public, of different sizes (AQC 2002a).
“To improve learning and teaching by increasing the capability of schools to apply the principles of contemporary quality and continuously improve all aspects of their operations for the benefit of learners and their learning.”

**Figure 1.5  Quality in Schools Purpose**

- “Learners and teachers, together, constantly engaged in analysing and improving their learning situation
- Learners and teachers finding joy in learning
- Interdependent learners developing habits and methods that will sustain them long beyond their schooling years
- Schools enjoying continued success through continuous improvement in the efficiency and effectiveness of school leadership and management processes
- Increasing involvement in the life of the school by students, parents and other supporters of the school system
- Greater community confidence in the school.”

**Figure 1.6  Quality in Schools Vision**

1. “To improve the learning processes and environment for students to enable them to take responsibility for their learning and enhance their ability to achieve superior learning outcomes
2. To improve the quality of life for the school community
3. To improve the efficiency and effectiveness of the school
4. To increase the responsiveness of the school to community needs
5. To demonstrate the relevance and benefits of the application of Quality Management principles to the improvement of education
6. To develop self-sufficiency in the application of Quality principles and practices as a key philosophy in managing the school.”

**Figure 1.7  Quality in Schools Objectives**
Participants - A Volunteer Team-based Approach

The two-year program called for the participation of a team (five or more members) of volunteers from each school. It was a requirement that the team include the organisation’s senior leader: the school principal.

It was also recommended that the team comprise volunteers from the staff of the school, this was to ensure the commitment and receptiveness of trainees was high.

Professional Development

Over the two-year commitment, school teams attended a series of seven, one-day workshops, and one four-day seminar, totalling eleven days of professional development. The professional development was facilitated by employees and contractors to the AQC. The program is detailed in Table 1.1 (AQC 2002a section 1 pp11-15).

During the workshops and seminar, the philosophy and practices of Quality Improvement were explored from a school and classroom perspective. The one-day workshops were attended by a consistent team of representatives from the school and conducted in networks of about ten schools. The networks were seen as a way to encourage sharing and facilitate learning between the schools.

A partnership was established with educational expert David Langford, a consultant from the United States. Langford, an ex-school teacher and student of Deming, had been applying the Quality Improvement approach for several years in his classrooms. Langford conducted a four-day seminar which was integrated into the Quality in Schools program. The seminar focussed upon introducing the Quality Improvement approach and methods as they applied to the classroom and student learning.

Learning support was provided through four half-day visits to the school over the two-year period. The purpose of the school visits was to provide direct support to the team in applying and progressing the learning activities introduced during the workshops. The site visits were facilitated by AQC employees and contractors.
<table>
<thead>
<tr>
<th>Workshop</th>
<th>Purpose and Objectives</th>
<th>Key Content</th>
</tr>
</thead>
</table>
| Getting Started                      | To introduce the Quality principles and practices as they apply to a school community | *Introducing the AQC and Quality in Schools*  
*Introducing the theory of Quality Improvement and the Quality Principles*  
*Systems Thinking*  
*School self-assessment (using the Quality Principles)*  
*Quality Tools*  
*Effective Teamwork*  
*Planning a Quality strategy* |
| Quality Learning Seminar with David Langford | Develop knowledge and know-how in the application of Quality in the classroom            | *Introducing the Quality philosophy and practices with emphasis on the classroom*  
*Introducing the Plan-Do-Study-Act (PDSA) Improvement Process*  
*Introducing Statistical Thinking* |
| Improvement Process and Tools #1      | To further develop capacity to use PDSA and tools with emphasis on steps 1-3            | *Extending understanding of Statistical Thinking*  
*Extending understanding of PDSA*  
*Using Quality Tools - Control Charts, Client Requirement Analysis, Operational Definitions, Deployment Flowcharting* |
| Improvement Process and Tools #2      | To further develop capacity to use PDSA and tools with emphasis on steps 4-9            | *Extending understanding of PDSA*  
*More Quality Tools*  
*Using PDSA in the classroom*  
*Documenting policies, processes and supporting documents* |
| Continuous Improvement in the Classroom | To consolidate the need for Quality in the classroom  
To provide examples of Quality in the classroom  
To introduce a methods to drive continuous classroom improvement | *Extending understanding of classroom Quality practices*  
*Classroom Systems Thinking*  
*Classroom self-assessment using the Best Practice in Learning Framework*  
*Students using PDSA*  
*More Quality tools* |
<table>
<thead>
<tr>
<th>Workshop</th>
<th>Purpose and Objectives</th>
<th>Key Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustaining Improvement</td>
<td>To develop know-how in self-assessment using the Australian Business Excellence Framework as a foundation for school improvement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To develop understanding in how continuous improvement may be integrated into leadership and management processes</td>
<td>School self-assessment using the Australian Business Excellence Framework</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrating continuous improvement into key school leadership and management processes</td>
</tr>
<tr>
<td>Leading Improvement</td>
<td>To develop an understanding of the dynamics of change, how it affects people and develop knowledge for leading improvement</td>
<td>Understanding change and how it affects people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implications for personal leadership and helping others</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effective Teams</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understanding intrinsic and extrinsic motivation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More Quality tools</td>
</tr>
<tr>
<td>Celebration</td>
<td>To showcase, recognise and celebrate school and individual progress and achievement, and enthuse others to consider a Quality approach. Sharing best practice through school displays and presentations</td>
<td>Reviewing the Quality in Schools process and reflecting on learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Closing’ the Quality in Schools formal two-year process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planning next steps/bringing others on board</td>
</tr>
</tbody>
</table>

**Table 1.1 Quality in Schools Program Overview**
Resources

A comprehensive training manual and tool reference book were issued to each participant. A set of reference texts and videos were also issued to each of the school teams.

Program Improvement

The workshops and resources were reviewed and improvements made based on data collected at the conclusion of each workshop, and before the commencement of a program with a new group of schools.

Participating Schools

From commencement of the program pilot in 1997 to 2004, 138 Victorian government schools took part in five groups or intakes. The schools involved were all State or public schools. There were no private or independent school participants in the program. The composition of each group is detailed in Table 1.2 (AQC 2002a).

<table>
<thead>
<tr>
<th>Group</th>
<th>Years</th>
<th>Primary Schools</th>
<th>Secondary Schools</th>
<th>P-12 Schools</th>
<th>Special Schools</th>
<th>Total Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (Pilot)</td>
<td>1997/1999</td>
<td>9</td>
<td>16</td>
<td>1</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>II</td>
<td>1999/2000</td>
<td>16</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>III</td>
<td>2000/2001</td>
<td>17</td>
<td>13</td>
<td>0</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>IV</td>
<td>2001/2002</td>
<td>18</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>V</td>
<td>2002/2003</td>
<td>20</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>VI</td>
<td>2003/2004</td>
<td>12</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>72</td>
<td>54</td>
<td>3</td>
<td>9</td>
<td>138</td>
</tr>
</tbody>
</table>

Table 1.2  Quality in Schools - Participating Schools
Funding

Group I was fully funded by the Victorian Department of Education and Training. Groups II and III were partially funded. Groups IV to VI self-funded their participation from the school’s global budget. Each Group paid for teacher release from the school budget.

Termination of the Program

SAI Global ceased to offer the Quality in Schools program in September 2004.

Evaluation of the Program

To date, evaluation of the program has been restricted to:

- a workshop evaluation by participants (participant satisfaction) conducted at the end of each professional development session (AQC 2002a)

- two participant perception analyses conducted on completion of the pilot and second group of schools by a third party commissioned by the AQC (Fenby 1999, 2000)

- a participant perception survey (telephone) attempting to involve all participating schools undertaken by Quality Learning Australia in 2005 (QLA 2005).

There has not been a study conducted to assess the impact of the adoption of the model by Australian schools on school performance and improvement involving a statistical analysis of school performance data.
The Research Goals

The aim of this research is to evaluate the impact of the Quality Improvement approach on school performance and improvement. Of particular interest is the effect that the program has had on improving student learning outcomes.

The study will attempt to determine whether the thinking, strategies and tools found to be effective in the improvement of business performance and productivity can be successfully deployed in an educational setting. It is hoped that the study will establish the extent to which the Quality Improvement approach can assist schools with their improvement efforts, and inform the design of future school-based change interventions. It is also hoped that this study will develop a process that may be used in the evaluation of future school change processes.

Process

The research process involves interaction with a sample of 22 out of 112 schools that participated in the program (from Groups I to IV – see below for explanation of this selection) in order to evaluate the depth of deployment achieved, and to analyse the improvement realised against key performance indicators.

The results for the sample are compared to those of a control group of a similar number of matched schools that were not participants of the program.

Timing

The study aims to assess the impact and sustainability of the approach on schools that participated in the program in groups one to four (see Table 1.2). These schools participated in the program between the years 1997 and 2002.

This was to provide a time interval of at least five years following completion of the program. This was thought to be a sufficient period of time to allow for embedding of the approach and any accompanying cultural change to take effect, and so that the sustainability of the program could be assessed.
There are three specific aims of the research and five research questions, as indicated in the next section.

**The Specific Aims of the Research**

1. To determine whether the *Quality Improvement* business model is relevant, transferable and of use in effecting school and classroom improvement.

2. To identify the major challenges experienced by schools in affecting improvement to inform the design and deployment of future school change initiatives and the improvement of education systems.

3. To develop a methodology that might be applied in the evaluation of other school improvement initiatives.

**Research Questions**

The four research questions underpinning the aims of the study are:

1. Have the schools that participated in the *Quality in Schools* program deployed the *Quality Improvement* approach to a greater degree than schools that did not participate in the program?

2. How does deployment of the *Quality Improvement* approach impact upon school performance?

3. Do the schools that participated in the *Quality in Schools* program show greater improvement than schools that did not participate in the program?

4. What are the major challenges experienced by schools in affecting improvement? Are these challenges the same now for schools that participated in the *Quality in Schools* program as for the schools that did not?
Contribution of the Research

In answering the research questions the study is expected to make important contributions in five areas. It is anticipated that this study will:

• Provide participant schools with valuable insights as to how they might sustain and extend their improvement efforts. It is hoped that the data-gathering process will assist schools in identifying areas where further opportunity for improvement exists, and provide ideas, focus and leverage for school and classroom improvement action.

• Demonstrate the relevance and effectiveness of the Quality Improvement approach and the Quality in Schools program in improving the performance of schools and classrooms.

• Inform the design and deployment of future improvement initiatives by schools and education departments, as well as those organisations and individuals responsible for facilitating and supporting change within the school education system.

• Develop a methodology that is applicable for the review and evaluation of other initiatives used by schools and education departments.

• Demonstrate the potential relevance of business models to educational improvement, showing just cause for building stronger relationships between industry and education for the purpose of shared learning.
Thesis Outline

The following is a description of the content and structure of the thesis.

Chapter 2 - Literature Review

The purpose of this chapter is to document a review of the relevant literature; including books, journals, newspapers, conference proceedings, government publications, reports and websites to provide the context, background and information to support this research.

The chapter includes a discussion of the current Australian school education system and argues the need for improvement. Recent attempts to improve the school education system and the impact of these improvement initiatives are described. The evolution and impact of the Quality Improvement approach in industry is explored. Finally the chapter considers the application of the Quality Improvement business model to school education, contrasting the approach with traditional teaching and learning practice, and examines what has been achieved and reported through application of the model in school education systems to date.

Chapter 3 - Methodology

The purpose of chapter three is to describe the research methodology used to achieve the aims and objectives of the study. The chapter discusses the research process, theoretical framework, research questions and hypotheses, the design of the data collection process, selection of the sample, and data analysis methods.

Chapter 4 - Data Analysis/Findings

The purpose of chapter four is to present the findings of the study, and to analyse and discuss the data obtained through the course of deployment of the research methodology.
Chapter 5 - Discussion

The purpose of chapter five is to discuss the findings of the study and the connection between the findings and the literature.

Chapter 6 - Conclusions and Implications

Chapter five presents the conclusions drawn from the research findings, discusses the implications, and the proposed contribution made. It also describes the limitations of the study and makes recommendations based on the research findings.

Bibliography

The bibliography provides details of all of the references used throughout the dissertation, listed in alphabetical order by author.

Appendices

The appendices contain more detailed information related to, and supporting certain aspects of the research.

Conclusion

This chapter introduced an argument as to the urgent need for improvement of the Australian school education system. Improvement is critical to ensure that students develop the necessary skills and aptitude, for a life of continuous learning as employees and citizens of an increasingly competitive global market place and challenging society.

The Quality Improvement approach was developed in business over recent decades in order to improve organisational productivity and performance.

The Quality in Schools intervention was designed by the Australian Quality Council to adapt the lessons learned with respect to Quality Improvement in industry to education.
The purpose of this research is to assess the impact of the *Quality Improvement* business model on education with respect to school and classroom improvement, and, in particular, student learning outcomes.

The research process involves the evaluation of a sample of schools that participated in the *Quality in Schools* program to assess the depth of deployment achieved, and analyse the improvement achieved against a set of (routine) school key performance indicators. The results for the sample are to be compared to those of a control group of matched schools that were not participants of the program.

This study will attempt to determine whether the thinking, strategies and tools found to be effective in the improvement of business performance and productivity can be successfully deployed in an educational setting. It will explore the extent to which the *Quality Improvement* approach can assist schools with their improvement efforts, and inform the design of future school-based change interventions. It is also hoped that the assessment methodology developed might be used for the evaluation of future school improvement strategies.

The following chapter will expand upon this introduction and discuss the relevant literature pertaining to the research.
Chapter Two

Literature Review

Introduction

The purpose of this chapter is to document a review of the relevant literature to provide the context, background and information to support this research.

A literature review is a documented comprehensive evaluation of published and unpublished work from secondary sources of data, of relevance to the study being undertaken. It is undertaken to better understand the area or areas the research pertains to, and to identify the variables that might influence or impact upon the study (Sekaran 1984).

A variety of reference materials have been used including books, journals, newspapers, conference proceedings, government reports and websites.

This chapter:

- describes the current Australian school education system and discusses the need to improve the system
- explores recent attempts to improve the school education system and the impact of these improvement initiatives
- examines the evolution of Quality Improvement and its impact in industry
- considers the application of the Quality Improvement business model to school education, contrasting the approach with traditional teaching and learning practice
- examines what has been achieved and reported through application of the Quality Improvement model in the school education system to date.
The Australian School Education System

Public schooling in Australia was introduced during the last decades of the nineteenth century, as each colony passed its own Education Act making education a State responsibility. The responsibility for education in Australia is now shared between Federal, State and Territory governments. The primary responsibility for school education still lies with each State and Territory government, in providing for and managing government schools, and supporting non-government schools.

In 2007, 3.34 million students attended 9,615 schools across Australia. Sixty-five percent attended public (government or state) schools and 35 percent attended independent (private or non-government) schools (DEST 2007b).

School Education Policy

The Federal government prescribes a curriculum framework that determines academic standards. Schools are required to provide subjects in eight Key Learning Areas: English, Mathematics, Studies of Society and the Environment, Science, Arts, Languages Other Than English (LOTE), Technology and Personal Development, Health and Physical Education. At the secondary level, subjects available to students are usually increased, with most schools offering a range of choices.

Each State and Territory determines its own policies and practices with respect to curriculum, student assessment and certification, resource allocation and utilisation, and teacher employment and professional development. As a result, there are effectively eight separate systems running in parallel across the nation (Productivity Commission 2005).
There are plans to move to a more uniform system. The Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) is responsible for coordinating education policy at a national level in Australia. Its members comprise State, Territory and Commonwealth Ministers of Education. In 1989, MCEETYA first endorsed a set of national goals for education. These were reviewed in 1999 and most recently in December 2008. The Melbourne Declaration (2008) recognises that “Australia’s capacity to provide a high quality of life for all will depend on the ability to compete in the global economy on knowledge and innovation” (MCEETYA 2008 p4), and that high quality schooling is central to achieving this. The goals of the declaration are currently guiding the establishment of a national curriculum, assessment and reporting, and teacher professional standards (MCEETYA 1989, 1999, 2008).

School Funding

State governments provide the majority of funding for public schools, and the Federal government for independent schools.

Independent school funding is supplemented with fees paid by parents. These schools operate under conditions determined by government registration authorities. Many have a religious affiliation, most with the Catholic Church.

The Federal Government provides supplementary funding to all schools to support agreed priorities and strategies, including specific education programs (e.g. for schools located in remote areas of Australia – the Country Areas Program), and for students with special learning needs (MEETYCA 2005, 2006, 2007, Middelton and Hill 1996).

During the 2006-2007 financial year over $29 billion was spent by Australian governments on primary and secondary school education (MEETYCA 2007).
Schooling Structure

Schooling in Australia starts with a preparatory year followed by twelve years of primary (six years - preparatory to year 6) and secondary school (six years – year 7 to 12) education. The legal age for starting (generally age 4-5 years) and leaving (generally 15-16 years) school varies between the States and Territories.

Year 12 students may study for a government-endorsed certificate that qualifies them for entry to university and other vocational education and training institutions on the basis of a final examination score.

The school year is divided into four terms (three in Tasmania); with term one commencing in late January/early February and term 4 ending in mid to late December. Students attend school from Monday to Friday each week, generally between the hours of 9.00 am and 3.30 pm (Study in Australia 2008).

Teaching

Teaching in Australia is a graduate profession based on not less than four years of tertiary education with teachers usually specialising in either the teaching of primary or secondary students.

The two main pathways into teaching are through a four year education degree, or a degree in another subject, followed by one to two years of specialised professional training in education.

Teachers are required to be registered in the State or Territory in which they teach.

The ongoing professional development of teachers is at the discretion of the school and individual. There are moves underway in several States and Territories to mandate the number of hours of professional development to be completed annually for teacher registration to be maintained (NSWIT 2007, VIT 2008).

Most schools have a specific budget for the professional development of staff, and there is minimal personal investment required from teachers.
Recent Federal government research into teacher professional development found that sixty (60) percent of teachers regard ongoing development as a high priority in their working lives, and that a majority do participate in further learning activity. The type of professional development undertaken generally relates to State and Territory government initiatives and the availability of funding. Professional development is provided by government agencies and external suppliers (DETYA 2001).

There are many indicators that the current Australian school system is not meeting expectations. This is at a time when expectations are rising due to the demands of a changing world, and developments in research associated with learning. This is discussed in the next section.

**The Need to Improve School Education**

**A Changing World**

Education was originally offered to only the elite of society. Public education as we know it was introduced just over one hundred years ago, in response to pressures from a rapidly changing western world. With society moving from total reliance upon a rural, agriculture-based economy to an urban, industrialised one, came the need for an education system to cater for the masses. Schools were established to provide a basic standard of education to feed newly mechanised industries (Jenlink 1995, Senge et al. 2000, Taylor 1997, Wagner 2008).

Society has continued to undergo significant change. There is now increasing demand for all students to reach a higher standard of education. Students must leave school equipped with the necessary skills and attitudes to allow them to thrive and contribute as citizens in an increasingly competitive and rapidly changing world (Friedman 2005, Fullan, Hill and Crevola 2006, Kennedy 2001, OECD 2007, Productivity Commission 2005).
“As Australia gets closer to the frontiers of economic performance, our progress will depend more and more on our capacity as a society to invent, innovate and adapt, in a rapidly changing and increasingly competitive world economy... The accessibility and performance of our education systems will be crucial to Australia’s economic future” (Productivity Commission 2005).

As well as being critical to an individual’s future employability, school education is also considered essential to enhance social wellbeing. School helps to develop the capacities, and build the confidence and self-esteem, essential to relationships and behavioural norms (Productivity Commission 2005, UNESCO Report 1995).

In 2002, the Commonwealth Department of Education, Science and Training (DEST) commissioned the Australian Chamber of Commerce and Industry (ACCI) and Business Council of Australia (BCA), to undertake research into the employability skill needs of the future. The report, formulated using the views of Australian industry and leading business enterprises, identified the skills and personal attributes necessary to meet current and future employment needs.

The report made recommendations for improvement to learning in several areas including reading, writing and verbal communication. Other essential skills identified through the research included teamwork, problem-solving, planning and organising, self-management, learning, technology, leadership and customer service. Personal attributes included positive self-esteem, commitment, honesty, reliability, personal presentation, adaptability, and the ability to deal with pressure (DEST 2002).

Other more recent studies demonstrate how levels of education and training directly relate to levels of workforce participation and national productivity (BCA 2003, Coulombe and Tremblay 2005, Dorwick in Masters 2007).

“Today, the benefits of having a good education are widely recognised. Whilst personal benefits remain a great incentive for individuals to do well, what is now much clearer, are the substantial economic and social costs associated with failure to learn and achieve one’s full potential” (Fullan, Hill and Crevola 2006).
Recent studies have shown the significant financial impact of school-based education (BCA 2003, Coulombe and Tremblay 2005, Dorwick in Masters 2007):

- a one (1) percent increase in literacy scores equates to a subsequent two to five (2-5) percent increase in labour productivity and a one-point-five (1.5) percent rise in GDP per head of population

- if the current proportion of Australian students completing year 12 was increased from less than seventy (70) percent to ninety (90) percent, our GDP would be $1.8 billion higher by 2020

- improving the literacy and numeracy skills of people at the lower end of the skills distribution is more important to economic growth than investment in producing more highly skilled graduates.

**Developments in Learning-related Research**

“By carefully considering what cognitive science is telling us about learning, we are in a position to reflect on what we do from a different vantage point, determine how well learners are benefiting from what we do, and identify what we could be doing differently” (Brown 2005 p3).

Models and theories relating to the working of the brain have been evolving for over 2000 years. In the last two decades, new technologies have been developed that allow for better exploration of brain functioning and how learning occurs. As a result, a whole new way of thinking about the brain is emerging that has significant implications for the way in which schools are structured and how student learning might be better facilitated.

Intelligence

Recent research demonstrates, contrary to previous beliefs, that intelligence is not an entity fixed by nature, but is infinitely malleable – the brain exhibits ‘neuroplasticity’. Whilst it is estimated that heredity provides 30-60 percent of our brains wiring or intelligence, the other 40-70 percent is due to environmental impact. With each new stimulation the brain has the potential to wire and rewire itself.

This research presents obvious implications as to teacher expectations with respect to student potential, while emphasising the need to provide frequent new learning experiences and challenges, critical to brain growth and learning (Ben-Hur 1997, Diamond 1998, Jensen 2005, NRC 2000).

Attention and Engagement

The purpose of human attention or engagement is to ensure survival and the extension of pleasurable states. Movement, sound and emotions attract our attention. Focusing attention depends upon the brain’s capacity to suppress irrelevant data and amplify relevant data. The average human must decide where to focus their attention during every waking moment - about 100,000 times a day (Jensen 2005).

Recent studies show that genuine attention can only be sustained for a maximum of ten minutes, and that the brain’s cognitive abilities change with high and low attention cycles over the course of a day. For example, levels of neurotransmitters associated with drowsiness are higher in the afternoon.

A teacher striving for constant attention in the classroom is therefore counterproductive to learning. Time is needed to process what is learned, and to create meaning. Learning is improved when students are given time to reflect, write notes, or engage in group discussion after new material is introduced (Klein and Armitage 1979).
Other factors that have been found to increase learner attention and engagement, which are not usually evident in the traditional classroom, include (Erlauer 2003, Jensen 2005, Marzano 2003):

- providing choice (content, timing, colleagues, projects, process, environment, resources)
- increasing relevance (making material personal, relating it to current affairs, family, life experience)
- making the learning experience engaging (emotional, energetic, physical, providing for learner negotiated deadlines and peer assessment).

**Emotional Intelligence**

Much research has been undertaken in recent times on the role of emotion in intelligence and its connection with learning. Emotion drives attention, creates meaning and memory pathways. It helps us to reason, focus the mind, set priorities and is a critical source of information for learning.

Emotional intelligence develops from early childhood. We learn quickly how to react through cause-and-effect experience. An emotionally traumatic early childhood can lead to underdevelopment and changes in brain structure, leading to increased reactivity, and impulsive and aggressive behaviour. Emotions affect student behaviour because they create distinct mind-body states through a series of chemical and physical reactions.

Stressful environments have been linked directly with student failure. Stress, threat and induced learner helplessness change the brain’s chemistry and affect learning. Success, friendships and recognition are craved by the student brain (Goleman 1995, Jensen 2005, Le Doux 1994, Sylwester 2000).

“Students are more likely to initiate high quality learning using various strategies if they are well motivated, not anxious about their learning and believe in their own capacities” (OECD 2007).
Motivation and Learning

Humans from an early age continuously seek out new experiences and behaviours, learning without the promise of extrinsic reward. The brain pursues novelty and is naturally curious. It produces its own rewards based on life experience and the production of chemicals that regulate stress, pain, and produce ‘natural highs’. We are therefore intrinsically motivated to learn.

Clear, compelling goals, self-belief in ability, feelings of hope and optimism, all release powerful brain chemicals that drive intrinsic motivation. The factors that have been shown to influence the intrinsic motivation of a learner are summarised in Table 2.1 (QLA 2007b p50).

The current school education system is based on extrinsic motivation, focused on processes associated with punishment and reward, controlling and competition rather than learning. We quickly learn how to please our teacher, how to avoid wrong answers, speak only when we know the right answer, and how to be quiet rather than ask questions. Over time this has a de-motivating effect on the learner (Deming 1994, Kohn 1992, 1999, Langford 2003, Senge et al. 2000).

Extrinsic motivators can temporarily stimulate the desired simple physical response in the short term. However, more complex behaviours like problem solving, project design and completion, and creative writing are usually impaired. Motivation is also not sustained over the longer term without increasing the extrinsic motivator.

Competition makes people feel that they are not in control of what happens to them. People who do not believe that they are directing their own actions can feel anxious, and suffer low self-esteem. Where an ‘artificial scarcity’ is established in a classroom, as in the awarding of a limited number of gold stars or ‘A grades’, and the ranking of test scores; learning is inhibited rather than enhanced (Deming 1994, Hattie 2009, Herzberg 1987, Kohn 1992, 1999, Langford 2003, OECD 2007, Scholtes 1998, Senge et al. 2000).
| **Collaboration**  (Relating to others) | **Relationships** | **Sense of learning together**  
Interdependence  
Common goals  
Teamwork  
**Self**  
Identity – understanding of role and responsibilities  
Valuing contribution, opinions  
Honouring prior knowledge  
**Environment**  
Supportive  
Non-competitive  
Non-threatening  
Equity and equality  

| **Responsibility**  (Feeling ‘in control’, having choice) | **Tasks** | **Variety**  
Choice  
Defining quality  
Timing – teaching matched to learning, Teaching when I need it  
Learning style preferences  
**Trust**  
Input to why, what, when, where and how things are done  
Responsibility for ‘whole-of-task’  
Expectations: ‘I can do this’ – challenging yet realistic  
Comfort in taking risks and making mistakes – ‘failing forward’  

| **Response-‘ability’**  (Strategies and methods that enable me to take action) | **Confidence** | **Knowing what is to be achieved/learned**  
Knowing how learning will be assessed and performance judged  
**Resources**  
Knowing where and how to find out  
Availability of resources, access to information  

| **Meaning**  (Relevance to me, purpose for doing, making a difference) | **Purpose** | **Relevant to me, my situation and my future**  
**Challenging** | **Interesting and achievable**  
**Making a difference** | **Makes a positive difference to myself and/or others – leaving a legacy**  

| **Success**  (Joy in achievement) | **Dignity** | **Creating pride, self-esteem**  
**Achievement** | **Regular feedback and recognition**  
**Mastery - learning new skills, seeing progress and growth**  
**Celebrating success and failure**  

| **Table 2.1** Factors shown to Enhance Intrinsic Motivation
“We destroy the love of learning in children, which is so strong when they are small, by encouraging them to work for petty and contemptible rewards – gold stars, or papers marked out of 100, or A’s on report cards - in short, for the ignoble satisfaction of feeling that they are better than someone else” (John Holt in Kohn 1992 p61).

**Meaning, Challenge and Feedback**

Brain research shows that the effectiveness of any learning experience is increased when there is clarity of purpose and meaning, when there is challenge presenting new information or experiences, and when interactive and ongoing feedback is provided (Hattie 2003, Hattie 2009, Jensen 2005, Senge et al. 2000).

“Most of the rapid learning of very young children is tied to purpose and vision. They learn to ride a bike to play with friends who have bikes... They learn new skills because they want them... But when children enter schools the system often presents them with new purposes unrelated to their own desires and aspirations – to please teachers, to get good marks on assignments, to receive awards and to be ranked high... Older children complain about the irrelevance of schoolwork to their lives and future... What they don’t, or can’t, communicate in words, students often communicate through disruptive or disengaged behaviour” (Senge et al. 2000 p22).

When the learning presents too great a challenge, the learner will give up; too little challenge and they will be bored. The brain is designed to operate on feedback working to form patterns or hierarchies of information, building upon existing neural connections, to create meaning and relevance. Attention must therefore be given to the knowledge, skills and attitudes that learners bring to the classroom (recognition of prior learning), and to the individual learning needs and progress of each student (Hattie 2009, Jensen 2005).

**Learning Preferences**

Research has shown that every learner has a unique profile of intelligence (similar to a fingerprint). Gardner’s *Multiple Intelligence Theory* (2000) provides a framework for instruction, curriculum and assessment.
The multiple intelligences are:

- Visual/Spatial
- Verbal/Linguistic
- Logical/Mathematical
- Musical/Rhythmic
- Bodily/Kinesthetic
- Interpersonal/Social
- Intrapersonal/Introspective
- Naturalist/Physical World

Gardner (2000) discusses the intelligences as entry points for learners that facilitate early learning. Learner’s best demonstrate what they know by way of their preferred intelligence. The classroom that caters for multiple intelligences provides a learning experience that naturally taps into the various intelligences. As a learner is exposed to experiences tailored to multiple intelligences, their profile strengthens and the use of all of the Intelligences becomes more systemic (Gardener 2000, Jensen 2005).

**The Social and Physical Environment**

The ability of a school and its classrooms to nurture the learner’s sense of belonging and wellbeing plays an important role in the learner maturing cognitively (Diamond 1998).

“The desire to belong, to feel a part of the group, is one of the most forceful basic motivations for human behaviour” (Balson 1989).

Learning outcomes are improved when students are allowed to socially interact and work collaboratively rather than individually or competitively. Traditional classrooms where students are seated in rows of separate desks facing the front, not able to clarify, question and discuss, are therefore not conducive to stimulation and growth of the brain (Balson 1989, Diamond 1998, Jensen 2005, Johnson and Johnson 1997, Kotulak 1996).

Providing for regular movement and exercise during learning increases blood flow to the brain improving concentration and efficiency (Brown 2005).
The classroom physical environment can also impact on learning; making learners feel safe and comfortable. Displays, including posters and student work on the walls of the classroom can facilitate learning. They attract the attention of the wandering eye of the (processing) student. Colour has been shown to affect mood and emotion. Crowded conditions, seating, lighting and temperature can also affect brain functioning and motivation (Jensen 2005, Prashnig 2001, Rodriguez and Ballanca 2007).

**Metacognition**

“Metacognition is our ability to plan a strategy for producing what information is needed, to be conscious of our own steps and strategies during the act of problem solving and to reflect on and evaluate the productiveness of our thinking” (Costa and Kallick 2000).

Without active intervention, few students will think about their learning: reflect on learning strategies, evaluate their approach, performance and decision-making processes.

Traditional education has tended to emphasise memorisation and rote learning. Research on the development of expertise, indicates that more than a set of general problem-solving skills or the memory of facts is necessary to achieve deep understanding. In the absence of not understanding the process used to achieve an answer, the outcome may be difficult, or even impossible, to reproduce (Costa and Kallick 2000, NRC 2000, Tribus 1996).

**Generational Cultural Differences**

Research has shown that cultural differences exist between generations and has revealed distinct preferences in learning. The student population of today’s schools is predominantly Generation Y. Most teachers are representatives of the Boomers generation (Table 2.2) (McCrindle 2007).

A comparison of preferred teaching styles and what motivates Generation Y shows significant differences to the preferences of earlier generations (Table 2.3). The youth of today appear less motivated by the incentives of previous generations, and have a different work ethic. This has obvious implications for the way the current student population are taught by an older generation (McCrindle 2007, Sheahan 2005).
<table>
<thead>
<tr>
<th>Generation</th>
<th>Birth Date</th>
<th>% of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seniors</td>
<td>Pre 1925</td>
<td>5%</td>
</tr>
<tr>
<td>Builders</td>
<td>1926-1945</td>
<td>15%</td>
</tr>
<tr>
<td>Boomers</td>
<td>1946-1964</td>
<td>25%</td>
</tr>
<tr>
<td>X</td>
<td>1965-1981</td>
<td>26%</td>
</tr>
<tr>
<td>Y</td>
<td>1982-2000</td>
<td>29%</td>
</tr>
<tr>
<td>Z</td>
<td>2001+</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 2.2 Generational Cultures

<table>
<thead>
<tr>
<th>Builders</th>
<th>Boomers</th>
<th>Generation X</th>
<th>Generation Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Teaching Style</td>
<td>Formal and technical</td>
<td>Planned Topical</td>
<td>Spontaneous Practical</td>
</tr>
<tr>
<td>Motivation</td>
<td>Duty</td>
<td>Significance</td>
<td>Lifestyle, consumerism - rewards for hard work</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.3 Generational Teaching and Motivational Stimuli

Other Factors Influencing Teaching and Learning

Research conducted by Bransford et al. (2000), Hattie (2009) and Vosnaidou (2001) into the factors that influence teaching and learning in the classroom suggest that significant changes are required to traditional pedagogical practice. The biggest influences on learning determined by Hattie (2009) through his meta-analytical research included the self-reporting of grades, feedback and teacher-student relationships. Interestingly, the greatest influencers were found to be of teacher and student origin rather than the home or physical environment (e.g. class sizes, adequate resourcing, television) – factors generally blamed for lack of student progress.
Vosnaidou (in Hattie 2009) concludes the following with respect to how children learn:

“Learning requires active involvement of the learner; learning is primarily a social activity; new knowledge is created based upon what is currently understood and believed; we learn by employing effective and flexible strategies...learners must know how to plan and monitor their learning, how to set their own learning goals, and how to correct errors...” (Vosnaidou in Hattie 2009 p246)

It is in light of this current research that the following section evaluates the current performance of our school education system.

**The Current Performance of Our School System**

Increasing school accountability and accessibility to student performance data is providing further evidence of the urgent need for school education reform in Australia (Fullan, Hill and Crevola 2006, SSCEWRE 2007, VIC DET 1996-2006).

A recent report by the Standing Committee on Employment, Workplace Relations and Education (2007) into the quality of Australian school education concluded that while on a global level the performance of our schools is at the top levels of achievement, there are worrying signs of under-achievement which advanced countries in Europe do not exhibit, and which leading Asian nations are overcoming.

The ‘tell-tale indicators’ of Australia’s failing education system reported in the current literature are discussed on the following pages.

**Student Engagement**

Recent research into the perceptions of school of Australian middle years’ students, shows waning engagement and enjoyment of school by students as they progress through the system (Figure 2.1). The school system appears to be de-motivating students over time, with the lowest levels of engagement noted in year nine. This recovers slightly in years ten and eleven at the end of the compulsory years of schooling (Hill and Russell in Bosker et al. 1999).
Figure 2.1  Attitudes to School: Decreasing Student Engagement Over Time (Kindergarten to Year 11)

Student Retention

Student retention relates to the progression of a student through the final years of schooling – years 10 to 12. In 2007, the retention rate for Australian schools was 77 percent with data also showing significant differences between the retention rates of indigenous and non-indigenous Australians (Figure 2.2 DEST 2007b). The number of students achieving year 12 certificates is failing to improve over time, despite Year 12 increasingly serving as the benchmark for employers (Figure 2.3 DEST 2007b).

In 2005, only 65 percent of Australians aged between 25 and 64 years had achieved at least upper secondary education, compared with 88 percent in the USA. Australia now has one of the lowest secondary school completion rates, behind East Asia, North America, much of Europe and Scandinavia.

In 2002, 35 percent of Australians aged between 25 and 64 years who had not completed secondary college, were unemployed. This compares with a 19 percent unemployment rate for those who had completed secondary school, and 14 percent for those who had completed tertiary education (Figure 2.4 DEST 2007b) (ACYS 2007, DEST 2007b, Lamb et al. 2004b, Productivity Commission 2005).
Figure 2.2  Student Retention Rates for Australian Schools (2001-2006)

Figure 2.3  Students Gaining Year 12 Certificates (2001-2005)
Studies show that the prospects of work and further education for early school leavers have changed very little in recent years despite improving economic conditions in Australia. In 2004, more than one quarter of 18-19 year olds were not in full-time education or full-time employment (ACYS 2007, DEST 2007b, Education News 2006, OECD 2004).

Compared with students who complete high school; early leavers generally experience higher levels of unemployment, lower income, decreased career stability, poverty, homelessness, drug and alcohol abuse, family breakdown and increased dependency on government welfare. This proves costly to communities in both economical and social terms.


Recent research examining the reasons given by students for leaving school early revealed that not liking school (51%), failing school (40%), not getting along with teachers (35%), not keeping up with school work (31%), are the major influencing factors (Lamb et al. 2004b).
Learning Standards

The Organisation for Economic Cooperation and Development (OECD) is a forum where governments of thirty of the world’s democracies “work together to address the economic social and environmental challenges of globalisation” (OECD 2007 p2).

The Programme for International Student Assessment (PISA) is an internationally standardised assessment that was jointly developed by the OECD. The assessment is administered to 15-year-old students and tests proficiency in numeracy, literacy and problem solving. It is regarded as an indicator of how well equipped students are for their future (ABS 2006, OECD 2007).

In the 2003 and 2006 PISA surveys, Australia performed above the OECD average in all three areas. Few countries performed better and Australia is in a large group of countries with similar results. However, when the data underpinning our averages are examined more closely, they exhibit wide variation, indicating that a higher proportion of Australian students are falling behind compared to other countries (ABS 2006, OECD 2000, 2003, 2006).

The results of other international tests reveal similar trends. Australian students performed less well in the 2004 Trends in Mathematics and Science Study (TIMSS), run by the International Association for Evaluation of Educational Achievement. Our Year 4 mathematics students were outperformed by fifteen other countries, and year eight students by thirteen other countries (OECD 2005, 2007, Productivity Commission 2005, The Australian January 2005).

Masters (2007) reports increasing variation in educational outcomes for Australian students. The percentage of students reaching national benchmarks for reading, writing and numeracy has failed to improve for year 3 to 7 students over the period 2001 to 2006 (Year 7 data illustrated in Figures 2.5, 2.6 and 2.7) (MCEETYA 2007b). This variation increases across the years of schooling, and over time (Figure 2.8) (Masters 2007).

Achievement also varies between socioeconomic groups (being lower for students of low socioeconomic status) and by geographical location (lower for rural areas) (Figure 2.3) (DEST 2007b).
Figure 2.5  Percentage of Year 7 Students Achieving the National Benchmark for Reading (2001-2007)

Figure 2.6  Percentage of Year 7 Students Achieving the National Benchmark for Writing (2001-2007)
Figure 2.7  Percentage of Year 7 Students Achieving the National Benchmark for Numeracy (2001-2007)

Figure 2.8  Increasing Variation in Mathematics Achievement over the Years of Schooling
A recent Federal Government inquiry reported on the literacy capacity of Australian teenagers, stating that many emerge ‘functionally illiterate’ from secondary school, unable to construct complex sentences and with restricted vocabulary. The same inquiry also reported on the relative poor performance of Australian schools against international benchmarks, noting the presence of ‘a long tail of under-achievement’ showing significant increasing variation in student performance across Australia (ASSCEWRE 2007).

“Thirty percent of Australian 15-year olds [are] not achieving a level of reading proficiency regarded by the OECD as being needed to meet the demands of lifelong learning in a rapidly changing knowledge-intensive society. Of even greater significance is that 11.8 percent of 15-year-olds – that is about 30,000 students each year – achieve only at or below level one in these tests... We do very well with the top third of the population... it is for the bottom half of kids we just do not have it right anywhere beyond years 3 or 4... In terms of standards, kids in the bottom quartile of mathematics performance at year 5 probably learn no more, although they do another five years of mathematics...” (ASSCEWRE 2007).

**Teaching**

A study of meta-analyses by Hattie (2003) examined the factors influencing student academic success (Table 2.4). The study revealed that teaching is responsible for about 30 percent of the variation observed in student academic success; “what teachers know, do, and care about, is very powerful in the learning equation” (Hattie 2003).

<table>
<thead>
<tr>
<th>Influencing Factor</th>
<th>Variation in Achievement (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student ability and application</td>
<td>50</td>
</tr>
<tr>
<td>Home influences</td>
<td>5-10</td>
</tr>
<tr>
<td>Schools (resourcing, school and class size, physical environment)</td>
<td>5-10</td>
</tr>
<tr>
<td>Peer pressure (positive or negative)</td>
<td>5-10</td>
</tr>
<tr>
<td>Teachers</td>
<td>30</td>
</tr>
</tbody>
</table>

**Table 2.4**  **Factors Influencing Student Academic Success**
A number of other research studies have shown that significant variation exists in teaching between classrooms, and that this significantly impacts upon learning outcomes for students (Hattie 2003, Hill et al. 1996, Leigh in ASSCEWRE 2007, Marzano 2003, Wright et al. 1997).

“Whereas students' inattentive behaviours had significant negative effects on their progress in literacy and numeracy, achievement mediated by quality teaching had notably stronger effects on decreasing their early and subsequent inattentive behaviours in the classroom. Above all, the findings underscored the importance of teacher quality by highlighting the crucial role that teachers have in meeting the cognitive, affective and behavioural needs of all students, as well as providing normative classroom environment conditions that are conducive to learning” (Hill et al. 1996).

It is the role of the teacher to increase the achievement of all students irrespective of their presenting abilities. Data shows that at present, Australia is not doing this as well as our OECD colleagues (OECD 2007b).

**Tertiary Education**

In an OECD (2007b) report on education, the data shows Australia ranking thirteenth in the number of 25 to 34 year-olds gaining a tertiary qualification. Only 54 percent of Australian school leavers continue on to tertiary studies. Less than half of the Australian adult population is tertiary qualified, with fewer than two percent holding post-graduate degrees (Table 2.5) (ACYS 2007, OECD 2007b).

Australian tertiary study completion rates also indicate the need for improvement. Of those students commencing their first course at university between 1998 and 2001, only 66 percent had completed the course by 2004. The strongest influence on course completion has been shown to be related to the tertiary entry score achieved by the student. The higher the entry score, the more likely the student is to complete their course of study (ACYS 2007, OECD 2007b).

Data shows that countries that invest in tertiary attainment experience a greater decline (or lesser increase) in unemployment (ACYS 2007, OECD 2007b).
### Table 2.5  Australian Achievement of Tertiary Qualification (2007)

<table>
<thead>
<tr>
<th>Qualification</th>
<th>% of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate degree</td>
<td>1.9</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>10.2</td>
</tr>
<tr>
<td>Graduate diploma</td>
<td>1.4</td>
</tr>
<tr>
<td>Diploma</td>
<td>6.3</td>
</tr>
<tr>
<td>Certificate</td>
<td>16.4</td>
</tr>
<tr>
<td>Other</td>
<td>3.6</td>
</tr>
<tr>
<td>No qualification</td>
<td>55.3</td>
</tr>
<tr>
<td>Not stated</td>
<td>4.8</td>
</tr>
</tbody>
</table>

### Parent Dissatisfaction

Research conducted by the Federal Department of Education Science and Training (DEST 2007c) in 2007, surveying over two thousand parents of school students, reported less than satisfactory parent perceptions of the current school education system:

- 25 percent of parents were less than satisfied with the ‘quality of teaching’ at their child’s school and the ‘quality of their child’s education’
- Only 58 percent rated the quality of primary education as ‘good’ or ‘very good’, and 40 percent for secondary education
- Over half (57.4 percent) indicated that improvement was needed. The top three areas identified for improvement were ‘curriculum quality/content’, ‘standard of teaching’ and ‘school facilities and resources’
- Fewer than half believed students were leaving school with adequate skills in Numeracy (39.8%), Literacy (37.5%), Job-related skills (31.8%), Science (46.7%), Australian History (23.9%) and Democracy (23.2%).

These results were also significantly worse than those reported in an earlier (2003) parent survey (DEST 2007c).
Teacher Morale

The literature reports growing dissatisfaction amongst the teacher population. The discontent appears to be school and system focused – involving deteriorating relationships with superiors and educational employers, workload and the standing of teachers in society (Dinham 1995, 2007, NSW Public Education Inquiry 2005, Wagner 2003).

“It is apparent that teachers increasingly feel unappreciated and criticised by society... Of almost 900 government teachers surveyed in Western Sydney, the status of teachers in society overall was found to be satisfying by only six percent of those surveyed.” (NSW Public Education Inquiry 2005).

“Teachers were blamed for everything by everybody - by governments, by media and by the newly instituted league tables of school performance that shamed the 'worst' of them” (Hargreaves and Lo 2000).

A NSW (2005) inquiry into the school education system reports a 'loss of teacher professionalism' as a recurring theme, with teachers describing deterioration in the level of respect extended to them by students, parents, community and government, their remuneration relative to other vocational groups, and the working environment and facilities.

This is reinforced by data showing that Workcover compensation for teachers diagnosed with stress-related illness has increased to in excess of $11 million over the last three years. Stress-related illness currently makes up more than half of the Workcover claims lodged by teachers (The Age August 6th 2008, Herald Sun September 27th 2007).

Other indicators that all is not well with the teaching profession relate to trainee and graduating teachers. It is estimated that more than 20 percent of teachers leave teaching within five years of graduating. A Federal Committee inquiry into the quality of Australian education reported that trainee teachers are more concerned with classroom management than teaching theory, and feel poorly prepared for the challenges presented by the classroom (ASSCWRE 2007, Manuel 2003, The Age March 4th 2008).
Young people are no longer attracted to the teaching profession, problem attributed to poor salaries and status relative to other professions. As a result, there are critical shortages of teachers of mathematics, science, foreign languages and information technology. Western Australia started the 2007 school year with 600 teacher vacancies. This means an increasing number of teachers are being asked to work outside their area of expertise (Ingvarson et al. 2004, MCEETYA 2003, The Age January 16th 2008, The Age January 28th 2008, The Age March 17th 2008, The Age August 6th 2007).

Submissions received by a Federal inquiry into teacher education also revealed “declining academic entry standards for students entering education faculties. Only four out of thirty-one universities required Year 12 mathematics at any level. The University of Melbourne claimed in its submission that an insistence on Year 12 mathematics would have resulted in half of the currently accepted applicants being rejected” (HRSCEVT 2007).

The number of male teachers in schools is declining. In 2004, male teachers in primary schools comprised 21 percent of the teaching population. In secondary colleges less than half the teachers were male (44 percent). Men also make up only 25 percent of current teacher trainees (ACYS 2007, HRSCEVT 2007).

We are also facing the challenges associated with an aging teacher population. One in three Victorian State school teachers are aged 50 or older. Government schools are currently experiencing an average annual attrition rate of four percent of teaching staff due to retirement (The Age January 19th 2008).

Increasing workloads create further issues. Teachers are expected to take on more and more responsibilities. These responsibilities consume more of their time in administrative and non-academic learning tasks, taking them away from the classroom and distracting them from the ‘core business’ of teaching and learning. As well, there are increasing reports of an ever-expanding curriculum, where all learning is mandated as being of equal importance. This results in teachers struggling to cover what is expected in the time available to them (New South Wales Public Education Inquiry 2005).
“Teachers no longer regard teaching as their core business. A whole plethora of disciplines: medical, integration (of children with disabilities), main streaming, bike education, drug education, child protection notifier (of child abuse), road safety, social work, counselling, mandatory cardio-pulmonary respiratory training have been added to our core business… they [teachers] are expected to undertake professional development in their own time; understand and implement curricula and policies which are arriving at schools more and more frequently… they are asked to complete a curriculum for which there are not enough hours in the day and to cater for individual differences in a class of up to thirty students where abilities can range from Stage 1 to Stage 4. For our public education system to work effectively these stressors must be dealt with and something done about low teacher morale” (New South Wales Public Education Inquiry 2005).

**The Move to Private Schooling**

Significant growth in the number of independent schools in the Australian system over recent years may be considered reflective of parent dissatisfaction with the public system in securing their child’s future, and demonstrative of the need for school improvement to build parent confidence and retain students.

In the last twenty years, student enrolments in public schools have declined, whilst those in private schools have risen. Thirty percent of the Australian student population now attend private schools. This compares negatively with ten percent in Britain and North America. The numbers in these countries are also static, whilst those in the Australian system are growing, and are at the highest level since State education systems were established (Bone 1996, Bonner and Caro 2007).

Studies have shown that students attending private schools are more likely to succeed with their learning (Bone 1996, Buckingham 2000, Davidson 1996, Gannicott 1998).

“Students who attend private schools are more likely to complete Year 12, get better results, have higher rates of university entry, and lower rates of unemployment” (Buckingham 2000 p2).

Studies have also shown that parents will frequently take on a second job to pay private school fees and expenses (Buckingham 2000).
School Performance Data

The MCEETYA National Report on Schooling reports the performance of Australian schools annually with respect to student learning outcomes in the areas of reading, writing and number (mathematics) for students in years 3, 5 and 7. As discussed earlier in this chapter (Figures 2.5 to 2.7), the results for the last seven years show little improvement in student learning outcomes (DEST 2007b, MCEETYA 2007).

The Victorian Department of Education and Early Childhood Development (DEECD) publicly reports a comprehensive range of school accountability data on an annual basis reflecting the levels of performance achieved by schools across the State. The data released by the Department over recent years shows limited improvement in student achievement and highlights decreasing levels of achievement as student’s progress through the school system (Figures 2.9 to 2.18) (DEECD 2008).

Figure 2.9 illustrates by way of a column chart, performance data reported by Victorian State schools relating to teacher assessment against the curriculum for Reading, for the years 2002 through to 2005, for each of the student year levels from preparatory to Year 10. The data show that there has been no improvement in Reading at any year level over these four years. The term *Benchmarks* is applied to the data, and means a summary of the actual levels of performance reported by schools in their annual reports. This allows schools to compare their performance with others in the State.

![Figure 2.9 Mean Benchmarks Victorian Students Reading (2002-2005)](image_url)
Figure 2.10 illustrates by way of a column chart, the growth in performance data reported by Victorian schools with respect to teacher assessment against the curriculum for Reading, for the years 2002-2003, 2003-2004 and 2004-2005, for each of the year levels from preparatory to Year 10. The data shows a worsening of performance for years Prep. to Year 7, and negative growth for years 8, 9 and 10.

Figure 2.10  Growth in Benchmark Scores Victorian Students Reading (2002-2005)

Figure 2.11 illustrates by way of a stacked column chart, the performance data reported by Victorian schools with respect to teacher assessment against the curriculum for Reading, for the years 2003, 2004 and 2005. Students are expected to attain particular skills and competencies as their learning progresses. This chart shows the proportion of students that have achieved recognised levels of learning (i.e. Beginning or Below, Consolidated, Established, Above Established) at the curriculum level appropriate to their year level. Because the Curriculum corresponds to a two-year learning scale, the data are for even numbered year levels (Prep, 2, 4, 6, 8 and 10). The data shows no improvement within year levels and increasing variation within the levels of learning as student’s progress through the system.
Figure 2.11 Proportional Benchmarks Victorian Students Reading (2002-2005)

Figure 2.11 illustrates by way of a column chart, performance data reported by Victorian State schools relating to teacher assessment against the curriculum for Writing, for the years 2002 through to 2005, for each of the student year levels from preparatory to Year 10. The data show that there has been no improvement in Reading at any year level over these four years.

Figure 2.12 Mean Benchmarks Victorian Students Writing (2002-2005)

Figure 2.12 Mean Benchmarks Victorian Students Writing (2002-2005)
Figure 2.13 illustrates by way of a column chart, the growth in performance data reported by Victorian schools with respect to teacher assessment against the curriculum for Writing, for the years 2002-2003, 2003-2004 and 2004-2005, for each of the year levels from preparatory to Year 10. The data show a worsening of performance for years Prep. to Year 6, positive growth for Year 7, and negative growth for years 8, 9 and 10.

![Figure 2.13 Growth in Benchmark Scores Victorian Students Writing (2002-2005)](image)

Figure 2.14 illustrates by way of a stacked column chart, the performance data reported by Victorian schools with respect to teacher assessment against the curriculum for Writing, for the years 2003, 2004 and 2005. The data are for even numbered year levels (Prep, 2, 4, 6, 8 and 10). The data show no improvement within year levels and increasing variation within the levels of learning as student’s progress through the system.

![Figure 2.14 Proportional Benchmarks Victorian Students Writing (2002-2005)](image)
Figure 2.15 illustrates by way of a column chart, performance data reported by Victorian State schools relating to teacher assessment against the curriculum for Mathematics (Number), for the years 2002 through to 2005, for each of the student year levels from preparatory to Year 10. The data show that there has been no improvement in Mathematics at any year level over these four years.

![Figure 2.15 Mean Benchmarks Victorian Students Mathematics (2002-2005)](image)

**Figure 2.15  Mean Benchmarks Victorian Students Mathematics (2002-2005)**

Figure 2.16 illustrates by way of a column chart, the growth in performance data reported by Victorian schools with respect to teacher assessment against the curriculum for Mathematics (Number), for the years 2002-2003, 2003-2004 and 2004-2005, for each of the year levels from preparatory to Year 10. The data show a worsening of performance in Mathematics across all student year levels.

![Figure 2.16 Growth in Benchmark Scores Victorian Students Mathematics (2002-2005)](image)

**Figure 2.16  Growth in Benchmark Scores Victorian Students Mathematics (2002-2005)**
Figure 2.17 illustrates by way of a stacked column chart, the performance data reported by Victorian schools with respect to teacher assessment against the curriculum for Mathematics (Number), for the years 2003, 2004 and 2005. The data are for even numbered year levels (Prep, 2, 4, and 6). The data show no improvement within and across the year levels and increasing variation within the levels of learning as student’s progress through the system.

![Stacked Column Chart](image)

**Figure 2.17 Proportional Benchmarks Victorian Students Mathematics (2002-2005)**

Figure 2.18 illustrates by way of a line graph, primary school student progress with respect to the key learning areas of English, Mathematics, Science, Technology, The Arts, Health and Physical Education and Studies of Society and the Environment, for the years 2003, 2004 and 2005. Progress is reported by teachers as No Progress, Little Progress, Satisfactory Progress, Good Progress, Very Good Progress and Excellent Progress. The data show no improvement in reported progress levels for each area of learning over the three years.

![Line Graph](image)
Efforts to Improve Australian School Education

Improvement Policy and Strategy

In Australia, strategy, policy and programs relating to school improvement are developed by State and Territory governments, with the Federal government coordinating the setting of national goals and priorities.

The Federal government has developed a broad policy framework for improving the quality of schooling and enhancing educational outcomes for students (Figure 2.19) (DEST 2008). School improvement is a central theme of all current Federal, State and Territory strategic documents, with safety, the physical environment, curriculum, pedagogy, and community involvement, recurring key priorities.
A wide range of programs are offered by State and Federal governments to support school improvement. These programs vary significantly in their nature, scale and structure. Grants and funding are available to schools, and groups of schools, that demonstrate a need (e.g. underperformance) or that present an acceptable case for monetary support (ACT DET 2004, DEST 2008, NSW DET 2008b, NT DEET 2008, Queensland State Education 2007, SA DECS 2008, TAS DET 2006, VIC DEECD 2008, WA DET 2008).

In Victoria, the State strategy or ‘blueprint’ for education is underpinned by the Effective Schools Model (Figure 2.20 DEECD 2007). As with other models described in the literature, great detail is provided as to the characteristics of an ‘effective school’ in the documentation describing the model. However, there appears however to be a distinct lack of explicit strategy and methods with respect to how schools might go about achieving these desired outcomes.
There is no doubt that the current school education system has improved since its inception during the industrial revolution. However, the literature reveals that any improvement made has been incremental, and despite schools being exposed annually to a range of initiatives, and the allocation of significant funding for school improvement, system performance data shows little improvement. Reports as to the impact of the strategies and initiatives deployed (other than anecdotal) are limited in the literature. And it appears that the system’s capability to improve is restricted by structures and practices reflective of outdated values and needs (Meier 2002, Senge 2002, Wagner 2003).

“"The problem is not the ‘failure’ of our public schools. They haven’t really changed for better or worse. The world has. That’s the real problem. Our system of education has become obsolete…” (Wagner 2003).
The Barriers to School Improvement

Many authors in the literature discuss the major challenges experienced over many years that stand in the way of the reform of education. Schools in Australia (and elsewhere in the world) have proved to be remarkably resistant to any attempt to change their basic structure and embedded processes (Caldwell and Hayward 1998, Evans 2000, Fullan 1993, Fullan et al. 2006, Kohn 2000, Larabee 1997, Masters 2007, Middelton and Hill 1995).

“Schools have resisted changes in paradigm and technology. They continue to look back to their origins rather than respond to new challenges and needs. The community has moved on, but the institutions and its defenders have not” (Professor David Loader in The Age August 6th 2007, p 12).

The major barriers to systemic change in the education system reported in the literature may be summarised as:

A Fragmented Approach...

Masters (2007) highlights how school change has yet to be embraced at a systemic level. He describes how improvement initiatives are selectively targeted toward disadvantaged groups and focus on specific areas, for example; literacy, the middle years of schooling, and boy’s education.

This approach to improvement by targeting the ‘tail-ends of the distribution’ effectively increases variation, rather than delivering system-wide improvement. Figure 2.21 shows the correlation between student reading scores obtained as part of the 2000 PISA testing program, plotted against socio-economic status (SES), and the significant variation within the data.

Learning improvement interventions are typically targeted at those groups considered socially disadvantaged, or for the ‘low-achievers’ in this distribution. However, there is wide ranging ability in the low socio-economic group and wide variation with respect to socio-economic status in the ‘low achieving’ group.
The significant and increasing variation displayed in the PISA data illustrates the ineffectiveness of this targeted rather than systemic approach to improvement. This approach to improvement by fragmenting the system only serves to increase variation in the system over time (Masters 2007).

“Interventions targeted towards disadvantaged groups have been shown to have limited impact… They [are] fragmented, not well sustained and not focused on needs… The attempt to treat all students as though they are the same (e.g. on the basis of group membership) can itself be a source of inequity…” (Masters 2007).

The Secondary Principals' Council submission to the NSW Public Education Inquiry (2005) reported that change is usually imposed on schools by districts, regions and departments, and usually conflicts with the changes that principals and teachers believe are needed to engage students in learning and meaningful pedagogy.

“Meaningful change agendas, the priorities of which are based solidly on research and usually supported by the profession, are difficult to sustain and are rarely supported by systems and government” (NSW Public Education Inquiry 2005).
Australian Education Departments have been undergoing continuous restructuring over recent decades, due to changes in government and thinking. As a result, there have been continual changes to school policy and process. Recommendations for greater school autonomy have, to date, been limited primarily to the financial management of the school budget (Lamb et al. 2004a, Middleton and Hill 1995, NSW Public Education Inquiry 2005).

**Ineffective Professional Development**

There is a fragmented and ad hoc approach to the ongoing development of teachers. A NSW Public Education Inquiry (2005) concluded that:

"Much of the evidence received [by the inquiry] referred to the ad hoc and piecemeal nature of professional development, its poor intellectual quality and lack of conceptual framework. It [is] often crammed into busy times of the year, [has] no official accreditation and no official recognition … nothing much has changed over the past nine years."

Data suggests that teachers are interested in new thinking and educational trends. The most significant barrier reported by teachers preventing ongoing development is a lack of time to attend training. Other issues identified include few incentives to improve skills (remuneration is not structured in a way to encourage development), little demand for highly trained teachers, and a lack of recognition and certification (DETYA 2000, NSW Public Education Inquiry 2005).

**School ‘Fad Surfing’**

Saphiro (1995) defines ‘Fad Surfing’ as:

"The practice of riding the latest management panacea and then paddling out again just in time to ride the next one; always absorbing for managers, lucrative for consultants and frequently disastrous for organisations."

In recent time, the experience for schools has been much the same as for the corporate world, as they continue to be confronted by an overwhelming choice of initiatives, programs and training options, all claiming to make the difference they desire. This results in a constantly changing focus and priorities as schools attempt one thing after another. In most cases, failing to realise the benefits of what has been embarked upon, before moving on to the ‘next best thing’.
As a result, people in schools become disillusioned and increasingly resistant to the next change (Donnelly 2005, NSW Public Education Inquiry 2005).

Middleton and Hill (1995) discuss the ineffectiveness of schools ‘copying’ from one another as a way to improve, behaviour driven by budgetary constraints and lack of purpose, vision and planning:

“\textit{In Australia we see schools... pick up an idea from another school and, without thinking it through completely, implement the idea. The result is a set of incompatible practices where elements of the new are trying to co-exist with elements of the old. Thus it allows for a mish-mash of innovations to struggle on... State bureaucracies can also be guilty of the same kind of error... when they generate policies to be implemented mechanistically without a parallel focus on the values and philosophy implicit in the change}” (Middleton and Hill 1995).

\textbf{Time, Commitment, Competing Priorities and Stakeholders}

Change requires time, focus and the commitment of senior leadership to take effect. Estimates of the time taken for effective transformation of organisations are usually in the vicinity of 5-10 years. Committing to a course of action over such a long period is challenging for many schools pressured by changing departmental priorities, staff turnover and budgetary demands (Middleton and Hill 1995).

In a recent evaluation of a federal change program, participating schools were asked to rate the extent to which a range of factors had impacted negatively on the deployment of the program in their school. Competing school priorities was reported (by over 51 percent of participants) to be the most significant constraint (DEST 2003).

“\textit{When systems attempt to consult with their communities, the initial responses often seem to be so contradictory that they can be seen to ‘cancel each other out’. What often happens is policy makers make their own decisions believing that the consultation process only produced contradiction and even divisiveness}” (Middleton and Hill 1996).
‘Paradigm-paralysis’ and ‘Change Fatigue’

Barker (1993), Covey (1989) and Senge (1990), discuss ‘paradigms’ and ‘mental models’ that effectively inhibit our ability to recognise change potential and how current paradigms can prevent us from seeking new ways:

“We get so used to our own perception of the world, that it can be hard to step back and realise how much we let our paradigms limit our thinking” (Barker 1993).

Many researchers discuss the outdated assumptions (‘mental models’) upon which the current school education system is based. This results in people ‘inside the system’ looking for new models based on existing practice, and failing to explore new ways of thinking.

“Quality won’t be found through the same old systems. Educators must challenge traditional mental models and ways of visioning and teaming if they hope to create meaningful change” (Isaacson and Bamburg 1992 p 42).

Middleton and Hill (1995) suggest that schools appear weary of what they see as too much change. Numerous demands placed on an already stretched system have put great strain on teachers and administrators. Teachers regard many of the changes as a way of the bureaucracy making them do still more with less. This has, over time, led to minimal improvement, and has built resistance to further change.

School Leadership Issues

Few would argue the critical importance of leadership in affecting improvement in any organisation. The literature reports increasing difficulty in attracting people to the role of school leadership given the growing complexity and demands associated with the position, the lack of professional support, and the nature, extent and pace of school change. There is also doubt as to the capacity of leadership to embrace and lead the level of change required (ACE 2001, Fenwick 2000, Lacey 2002).

The above summary suggests that, to date, quality improvement in school education has not been particularly successful. The next section discusses how this has not necessarily been the case in industry.
Quality Improvement in Industry

The Evolution of Quality Improvement

As discussed in Chapter One, the Quality Improvement approach has been developing over a long period, and is attributed to many leading strategic thinkers. The origins of Quality Improvement can be traced back to medieval Europe, when thirteenth century craftsmen began to form unions (guilds) and to product inspection during the industrial revolution of the early 1800s.

During World War II quality became critical in the manufacture of war-related machinery. In order to simplify and make the process of inspection more efficient without compromising safety; sampling techniques were introduced. This was assisted by the publishing of quality standards and the advent of training in Statistical Process Control (ASQ 2007).

Total Quality Management (TQM) emerged as a direct response to the quality revolution in Japanese industry following World War II. The Japanese embraced the strategies introduced by Americans W. Edwards Deming and Joseph M. Juran.

Their teachings moved the manufacturing focus away from product inspection, to prevention - improving manufacturing and management processes by involving the people working in the processes.

Within a few years, Japan was able to produce higher-quality products at lower prices and as a result, revolutionised the world automotive and electronics marketplace, forcing American industry to react (Aguayo 1990).

Since this time, new improvement models have evolved from the foundations of Deming, Juran and other early practitioners, and application has moved beyond manufacturing into service, healthcare, government, and the education sector.

The advent of the ISO 9000 series of quality management standards resulted in significant activity as it provided a benchmark for quality assurance through the certification of suppliers.
An example of a more recent iteration of the Quality Improvement approach is Six Sigma, a methodology developed by Motorola to improve business processes by minimising defects.

This has evolved into an organisational approach that has achieved significant breakthroughs in improvement – and bottom-line results (ASQ 2007).

The US Malcolm Baldrige National Quality Award was created by Public Law in 1987 as American industry and government leaders became increasingly concerned about foreign competition, and the cost of poor quality to industry and the nation’s economy. Also, as the potential for improved productivity, lower costs, and increased profitability by applying the Quality Improvement approach was realised (NIST 2007, 2008).

“Strategic planning for quality and quality improvement programs, through a commitment to excellence in manufacturing and services, are becoming more and more essential to the well-being of our Nation’s economy and our ability to compete effectively in the global marketplace… in order to be successful, quality improvement programs must be management-led and customer-oriented, and this may require fundamental changes in the way companies and agencies do business… a national quality award program of this kind in the United States would help improve quality and productivity…” (NIST 2007).

The award recognises organisations for outstanding performance in the areas of leadership, strategic planning, customer and market focus, measurement, analysis and knowledge management, human resource focus, process management and results. It is presented to organisations in the categories of education, healthcare, manufacturing, service and small business and remains America's highest honour for business excellence.

An Australian version of the Baldrige Framework and Award was established in the early 1980’s, after a senate enquiry identified the need for a unified approach in supporting the quality improvement efforts of Australian industry. The Business Excellence Framework and Award (introduced in Chapter One) were administered by the Australian Quality Council (AQC). The AQC used the theory and methods developed by Deming and others to form the basis of the Framework. In early 2002 the AQC was taken over by SAI Global, who has continued on with the work of the AQC since this time (AQC 2002a, 2002b, SAI Global 2007).
Similar organisations now exist in over 170 countries worldwide, using quality improvement frameworks to drive and support industry improvement efforts (AQC 2002a).

The next section describes the key contributors to industry’s Quality Improvement approach.

**Key Contributors**

**W. Edwards Deming**

William Edwards Deming is recognised as one of the key influencers and strategic thinkers of the last century, and the most significant of the many contributors to the Quality movement.

Deming was an American statistician and college professor, widely recognised for his work with Japanese and American industry following World War II. As part of Japan’s post-war reconstruction efforts, Deming trained hundreds of engineers, managers, and top executives from Japanese industry, in methods to improve design, and product and service quality.


Deming based his original work on that of Walther Shewhart, the originator of Statistical Process Control and the Control Chart. Deming’s broader application of Shewhart’s statistical methods, to not only manufacturing, but also to organisational leadership and management processes, led to his significant influence in industry.

On returning to the US from Japan, Deming operated an international consultancy business. He remained largely unknown until 1980, when he featured in a television documentary that highlighted increasing industrial competition from Japan. As a result of the broadcast, the demand for Deming’s services increased dramatically. He worked for many major US corporations including the Ford Motor Company that between 1979 and 1982, had incurred US$3 billion in losses.
After engaging the services of Deming in 1981, by 1986, Ford had become the most profitable car manufacturer in the US (Aguayo 1990, Deming 1994, Kennedy 2007). His four-day seminars went on to attract 10,000 people annually for over ten years.

Deming first documented his theory of management as 14 Points for Management (Figure 2.22). His final book, published in 1994, documents what Deming called a System of Profound Knowledge (introduced in Chapter One). Deming described his System of Profound Knowledge as four critical concepts requiring focus to bring about sustained organisational improvement, they are: Appreciation for a System, Knowledge about Variation, Theory of Knowledge, and Psychology (Deming 1994).

| 1. | Create constancy of purpose toward improvement of a product and service with a plan to become competitive and stay in business. Decide to whom top management is responsible. |
| 2. | Adopt the new philosophy. We are in a new economic age. We can no longer live with commonly accepted levels of delays, mistakes, defective materials, and defective workmanship. |
| 3. | Cease dependence on mass inspection. Require, instead, statistical evidence that quality is built in. (Prevent defects instead of detect defects.) |
| 5. | Find problems. It is a management’s job to work continually on the system (design, incoming materials, composition of material, maintenance, improvement of machine, training, supervision, retraining) |
| 6. | Institute modern methods of training on the job |
| 7. | The responsibility of the foreman must be to change from sheer numbers to quality… [which] will automatically improve productivity. Management must prepare to take immediate action on reports concerning barriers such as inherent defects, machines not maintained, poor tools, and fuzzy operational definitions. |
| 8. | Drive out fear, so that everyone may work effectively. |
| 9. | Break down barriers between departments. People in research, design, sales and production must work as a team to foresee problems of production that may be encountered with various materials and specifications. |
| 10. | Eliminate numerical goals, posters, slogans, asking for new levels of productivity without providing methods. |
| 11. | Eliminate work standards that prescribe numerical quotas. |
| 12. | Remove barriers that stand between the worker and his right of pride of workmanship. |
| 13. | Institute a vigorous program of education and retraining. |
| 14. | Create a structure in top management that will push every day on the above 13 points. |

**Figure 2.22** Deming’s 14 Points for Management
“We have grown up in a climate of competition between people, teams, departments, divisions, pupils, schools, universities. We have been taught by economists that competition will solve our problems. Actually, competition, we see now, is destructive. It would be better if everybody would work together as a system, with the aim for everybody to win. What we need is cooperation and transformation to a new style of management. The route to transformation is what I call the system of profound knowledge.” (Deming 1994, pxv-xvi).

Deming’s work was recognised with many academic awards including the National Medal of Technology and Distinguished Career in Science award from the National Academy of Sciences. He was invited back to Japan time after time where he became a revered counsellor and awarded the Order of the Sacred Treasure by the former Emperor Hirohito. Japanese scientists and engineers named the famed Deming Prize after him. The prize is still awarded to organisations that apply and achieve the highest and most stringent quality-performance criteria (Aguayo 1990, Deming 1994, Latzko and Saunders 1995, Leadership Institute 2005, Walton 1986).

**Joseph M. Juran**

Juran was an American electrical engineer who worked at the same time as Deming in pioneering the *Quality* approach in post-war Japan. His story with American industry is similar to Deming’s in that, the contribution he made to their wellbeing was not recognised until after the benefits to Japanese industry had been realised, mainly through loss of market-share to US organisations (Kennedy 2007).

Juran also worked with Walther Shewhart at Bell Industries where that he received his initial training in *Quality* methods and became an expert in the approach.

After working in manufacturing for many years, Juran became a consultant to many of the largest US corporations including Motorola, Texas Instruments, Xerox, and Du Pont. His training has been attended by more than 20,000 people in over thirty countries. He is recognised for his pragmatic approach to *Quality Improvement*.

Juran’s most recognised publication – the *Quality Control Handbook* – was published in 1951 (the first manual of its kind), and updated in 1988. Juran too was recognised by the Japanese with an Order of the Sacred Treasure (Juran 1989, Kennedy 2007).
Phillip B. Crosby

Crosby, another American, was initially based in a manufacturing environment. He defined quality as ‘conformity to certain specifications set by management’ - specifications based on customer needs.

Crosby popularised the idea of ‘zero defects’ (for which he received the Distinguished Civilian Service Medal from the US Department of the Army in 1964) and the ‘cost of poor quality’, allowing organisations to calculate how much it cost when things did not ‘go right the first time’.

His ‘Quality is Free’ approach to Quality Improvement showed how organisations using the approach can recover all costs through reducing rejection rates and waste (Crosby 1999, Skymark 2007).

The contribution of the above people and many others has developed a new management approach that has proved to be very successful in industry, as discussed in the next section.

Quality Improvement versus Traditional Management Methods

The methods and practices of the Quality Improvement approach are in many ways significantly different to the traditional methods that have evolved through the industrial age and armed forces (Aguyao 1990, Scholtes 1998).

Table 2.6 uses the principles of Quality Improvement developed by the AQC to contrast the traditional methods of leadership and management in industry with those of a Quality Improvement approach (Aguyao 1990, AQC 2002a, 2002b, QLA 2007, Scholtes 1998).
<table>
<thead>
<tr>
<th>Improvement Principle</th>
<th>Traditional Management Approach</th>
<th>Quality Improvement Approach to Management</th>
<th>Traditional Teaching &amp; Learning Approach</th>
<th>Quality Improvement Approach to Teaching &amp; Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose and Vision</strong></td>
<td>Where purpose, vision and planning are discussed, it is by management in isolation of others in the organisation. Improvement is often left to chance and is the responsibility of supervisors and senior leaders.</td>
<td>There is clarity and constancy of purpose and a shared vision of excellence across the organisation aligning effort. Everyone is aware of their role and contribution to the organisation’s purpose and vision. Plans are developed with employees building ownership and understanding of what needs to be done. Quality and improvement are a constant focus of all in the organisation. Improvement is planned and time is allocated to work on improvement. Improvement teams are a feature of the organisation. Structured methods are used to focus improvement efforts to maximise return on investment.</td>
<td>Only the teacher understands the purpose and relevance of what is being learned, what is to be learned (the curriculum) and the criteria for assessment. The teacher plans and assesses all learning activity in isolation of the students. Where the school has a purpose and vision, few stakeholders know it and are not involved in its development. The focus of school activity changes frequently and priorities are unclear. There is little relationship between the school plan, budget and individual performance plans.</td>
<td>Students understand learning intentions – all activities have an explicit, specific purpose. Students are challenged and empowered by success criteria they have a key role in developing. The curriculum is shared, and they use it to track learning progress and set goals. Students participate in planning for learning, developing a range of learning strategies and decision-making processes. Through dialogue with key stakeholders, the school community enjoys a shared purpose and vision that guide planning, decisions and action. Purpose and vision are discussed and documented for programs, projects, teams etc. Everyone understands their contribution due to the alignment of school, team and individual goals.</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>Mutually agreed plans translate organisational direction into actions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Page 73*
### Improvement Principle

<table>
<thead>
<tr>
<th>Traditional Management Approach</th>
<th>Quality Improvement Approach to Management</th>
<th>Traditional Teaching &amp; Learning Approach</th>
<th>Quality Improvement Approach to Teaching &amp; Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clients</strong>&lt;br&gt;Quality and value are determined by the client&lt;br&gt;Management, as the supplier, determines the quality of the product or service and is primarily interested in ‘getting product out the door’. Management focus is on increasing price, cutting costs and quality to increase profits.</td>
<td>Clients are regarded as the arbiters of quality. The organisation improves its processes by working to understand current client needs, predict future needs and the use of client satisfaction data. The organisation strives to develop loyal customers by continuously improving product quality recognising that this leads to higher profit.</td>
<td>The school does not see itself as having clients. Students are not involved in planning and decision-making at any level. Teachers rarely meet with parents to understand their needs and expectations. Parent perceptions of the school are not sought or understood.</td>
<td>Students are co-creators of their education. They have a voice. Teachers actively involve them in the design, deployment and evaluation of the learning system. There is ongoing inquiry with students to identify and remove barriers to their learning. Parents are active participants in the learning process of their child. They are fully informed about their child’s progress. The school and its teachers are constantly growing their understanding of parent needs and feedback.</td>
</tr>
<tr>
<td><strong>Processes</strong>&lt;br&gt;Processes deliver outcomes. To do things better, better methods are needed, this means improving processes. The focus is on prevention – finding the causes of defects or problems with a process and working to minimise or eliminate them. Changing the person in the role will not change the outcome!</td>
<td>All work is seen as a process. Processes deliver outcomes. To do things better, better methods are needed, this means improving processes. Change the person in the role will not change the outcome!</td>
<td>When things go wrong, individuals are blamed. Few school and classroom policies and processes are documented; this leads to inconsistency and frustration. Time and effort are wasted as processes are re-invented each time they are used.</td>
<td>Everyone understands that most of the time, systems and processes are responsible for performance and behaviour. When things go wrong the process responsible is identified and improved. Everyone works together to agree, standardise and improve school and classroom processes. System documentation is developed by, and accessible to stakeholders. This promotes role clarity, teamwork, an understanding of contribution to the bigger system, and improvement.</td>
</tr>
<tr>
<td>Improvement Principle</td>
<td>Traditional Management Approach</td>
<td>Quality Improvement Approach to Management</td>
<td>Traditional Teaching &amp; Learning Approach</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------</td>
<td>----------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td><strong>Systems</strong>&lt;br&gt;All people work in a system, outcomes are improved when people work on the system</td>
<td>People are seen as the barrier to improving productivity and performance. They are held accountable for their work but are powerless to improve it. Promoting competition and differentiation among workers is seen as the way to bring out their best.</td>
<td>Employees work with management to improve systems and processes responsible for delivering outcomes. A holistic approach is fostered. Everyone’s contribution is understood and valued. People understand how what happens in their part of the system impacts on other parts of the system. They collaborate to work smarter not harder.</td>
<td>People spend all of their time working IN the system on daily activity. There is little or no time spent working ON the system to improve it. Discipline and classroom management issues take a significant amount of time away from teaching and learning.</td>
</tr>
<tr>
<td><strong>Data</strong>&lt;br&gt;Effective use of facts, data and knowledge leads to improved decisions</td>
<td>Decisions are made based on opinion and gut feel, often based on misleading perceptions. Only management has access to (limited) data.</td>
<td>Everyone in the organisation has access to the data they need to do their job well. Data are asked for and used to focus improvement effort, inform planning and decision-making. Data are obtained from a variety of sources including stakeholder perceptions and process performance.</td>
<td>Data are used to rank and grade students. The school rarely reviews progress against goals and priorities. There are few measures in place to provide an accurate understanding of the performance of the school. Decisions are made in the absence of data.</td>
</tr>
<tr>
<td>Improvement Principle</td>
<td>Traditional Management Approach</td>
<td>Quality Improvement Approach to Management</td>
<td>Traditional Teaching &amp; Learning Approach</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Variation</td>
<td>The use of statistics is confined to financial measures. Management relies on averages and single points of data. They make changes to processes in the absence of understanding variation. This increases variation, frustration and wasted effort.</td>
<td>People work to minimise the variation exhibited by the organisation’s systems and processes. There is in-depth understanding of Common and Special Cause variation that informs action across the organisation. Quality tools are used to collect and present data in a way that assists with understanding the variation the system and processes is producing.</td>
<td>People rarely take the time to distinguish between causes and symptoms. There are frequently differences in understanding among staff and students. Data are rarely presented in a way that will facilitate an understanding of performance and progress.</td>
</tr>
<tr>
<td>People</td>
<td>Employees are treated as commodities. They are not required to think but do as instructed by management. Quotas, fear and incentives like merit pay are used to extrinsically motivate employees to increase performance.</td>
<td>People are valued, challenged and find joy in work. They are seen as the most knowledgeable when it comes to improving processes and critical to the organisation’s efforts to continuously improve. Processes and systems are continuously improved to remove barriers to good work. Intrinsic motivation is a key focus; recognising people strive to do a good job due to pride in work, professionalism and self-respect.</td>
<td>Students are extrinsically motivated through reward (grades, prizes), and punishment to achieve better results. Staff work in isolation – their classroom is their responsibility.</td>
</tr>
</tbody>
</table>
### Improvement Principle

**Learning**
Continuous improvement and innovation depend upon continual learning

**Stakeholders**
The organisation’s actions to ensure a clean, safe, fair and prosperous society enhance the perception of its value to the community

**Sustainability**
Determined by an organisation’s ability to create and deliver value for all stakeholders

<table>
<thead>
<tr>
<th>Improvement Principle</th>
<th>Traditional Management Approach</th>
<th>Quality Improvement Approach to Management</th>
<th>Traditional Teaching &amp; Learning Approach</th>
<th>Quality Improvement Approach to Teaching &amp; Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning</td>
<td>Training is seen as an expense and privilege. Improvement is not planned and rarely evaluated. Problems remain unsolved or ineffective solutions are put into place.</td>
<td>Training is seen as an investment in the continuous improvement of the organisation. The Plan-Do-Study-Act (PDSA) Cycle provides the foundation for learning and improvement, ensuring clarity of purpose, the use of data, analysis of root causes of problems and client needs, and planned and evaluated action.</td>
<td>School improvement activity is ad hoc and sporadic. Improvement is rarely planned and evaluated. Changes are imposed by leadership. Professional development lacks focus. There is limited time to engage in learning due to competing priorities.</td>
<td>Staff and students approach problems using ‘PDSA thinking’. Improvement teams, involving key stakeholders deliver improvement across the school. All staff and students set, monitor and achieve learning goals. Errors and failure are embraced as learning opportunities.</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>The organisation’s focus is on profit generation for owners and shareholders, without consideration of the impact upon others in the community and the environment. Purchasing departments source supplies from the cheapest sources.</td>
<td>The organisation recognises it is part of a larger system and the impact of its activities and outcomes on the many stakeholders, the community and environment. The organisation is ethical in the way it goes about conducting its business and achieving its purpose. It recognises that stakeholders have varying needs which must be balanced to ensure sustainability and success. Single source relationships are nurtured with suppliers who intimately understand the organisation’s processes. This leads to improved quality of supplies.</td>
<td>Stakeholders are not identified or their needs understood. They are rarely involved or consulted in the activities of the school. Teacher stress levels and workloads are high. The school does not have or allocate time to participate in community-based projects.</td>
<td>The school understands who its stakeholders are and manages relationships well. Stakeholders are consulted and play an active role in planning and improvement. The school is involved in projects ‘beyond its normal boundaries’ to work with the community and environment. Teacher stress and workload are much reduced.</td>
</tr>
<tr>
<td>Sustainability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Leadership
Senior leadership’s constant role modelling of these principles, and the creation of a supportive environment, are necessary for the organisation to reach its potential.

Quality is the job of the inspector or organisation’s Quality Officer. The manager-employee relationship is patronising and paternalistic.

Quality is everyone’s responsibility. Leaders work to drive out fear, and establish an environment of trust across the organisation so that everyone works together and feels empowered to do their job well. The behaviour of leaders reflects what they expect to see in others.

The teacher has total control over the classroom. Students see the purpose of the work they do as pleasing the teacher. The teacher gives orders for the student to carry out with students seeking teacher approval for everything they do. Leadership is seen as, and limited to, those in authority.

Leadership is seen as, and limited to, those in authority.

School leadership capacities, systems and processes are understood and continuously improved. Leaders role model the school values and philosophy.

Table 2.6 Contrasting Traditional Management, School and Classroom Methods with those of Quality Improvement
The Impact of Quality Improvement in Industry

“Total Quality Management (TQM) has been one of the most significant management ‘movements’ in the US during the past 15 years, and perhaps one of the most significant management movements since ‘management’ became an identified professional activity. TQM has been called a fad by many. However, if TQM is a fad, it is one of the longest and most significant fads ever…” (Easton and Jarrell in Ryan 2004). The following section aims to discuss the affect the Quality Improvement approach has had on industry, by discussing the findings of a number of studies reported in the literature that relate to both the Australian and overseas experience.

Australia

Research conducted with Australian organisations in 1999 demonstrated a positive correlation between the depth of deployment of the Quality Improvement approach, and the key performance indicators of organisations that had applied for Business Excellence recognition (Figure 2.23) (AQC and University of Wollongong 1999).

![Figure 2.23 Correlation Chart - Australian Business Performance Improvement and Quality Improvement Deployment (Business Excellence Evaluation Score)](image-url)
Overseas

The US Baldrige organisation has conducted longitudinal research into the impact of Quality Improvement on organisations, by assessing the stock market performance of Quality award winners over time. The research, conducted from 1994 to 2004 consistently showed that organisations applying the Quality approach out-performed like organisations by a factor of as much as six times (NIST 2007, Ryan 2004).

Singhal and Hendricks (1996) examined the performance of 600 US organisations that had received Quality awards. The five-year study showed that all companies had improved in many areas, including stock price return, operating income and sales. A further study by the same researchers in 2001, found that award winning organisations outperformed others by 38 to 45 percent in stock price (Singhal and Hendricks 2001).

In 1991, the US General Accounting Office conducted a review of the impact of Total Quality Management practices on the performance of US organisations. The review examined 20 companies that were among the highest scoring applicants for the Malcolm Baldrige Award. The research showed overall improvement in performance including employee relations, productivity, client satisfaction, market share and profitability (Ryan 2004).

Easton and Jarrell (in Ryan 2004) studied the performance of 108 ‘Quality’ companies over a five year period. They found that performance improvement was consistent across all accounting and stock variables. They reported that their study provides conclusive evidence that the long-term performance of organisations improves where the Quality Management approach is deployed. Also, that performance improved to a greater extent in those organisations considered to be more advanced in their deployment of the approach.

Numerous management perception studies report the tangible and intangible benefits realised through deployment of the Quality approach. In a survey conducted by the American Society for Quality in 2004, ninety-nine percent of senior executive respondents indicated that Quality had contributed to the organisation’s ‘bottom-line’ through repeat business, customer loyalty, diminished rework, and savings on labour and materials (Ryan 2004, Weller 2004).
Those organisations in the US that have embraced the most recent iteration of the Quality Improvement approach – Six Sigma – can accurately report the benefits realised in financial terms due to the data/dollar driven nature of this approach. These include (Ryan 2004):

- General Electric began applying Six Sigma in 1995; by 1999 it was reporting US$2 billion in annual benefits
- AlliedSignal claimed savings of more than US$2 billion dollars for the period 1991 to 2000

Can the success achieved using the Quality Improvement approach in industry also be achieved in schools? The following section explores this important question.

Quality Improvement in Schools and Classrooms

Adapting what has been learned from Industry to Education

Towards the end of his career, Deming conducted sessions specifically tailored for educators, to discuss the relevance and application of his System of Profound Knowledge to education, recognising that (Agayu 1990, Deming 1994).

“We will never transform the prevailing system of management without transforming the prevailing system of education. They are the same system…” (Deming quoted by Senge 2007).

Dr Myron Tribus met Deming in the mid 1980s and became an advocate of Deming’s teachings. Tribus (who has enjoyed a long and distinguished career as an educator) became well known for his ability to translate Deming’s work into practical actions for business and education (Tribus (no date)).
“Quality in education is what makes learning a pleasure and a joy… Teachers must ever be alert to engage students in a discussion of what constitutes a quality experience, how they shall know it, how they shall measure their accomplishments and how they shall demonstrate to others what they have done. The negotiations and discussions are never done. It takes constant engagement to wed a student to learning…” (Tribus, no date).

Other specialists in Quality Improvement in education have also emerged. They have extended and applied Deming’s teachings, and report considerable success in applying the approach at the classroom, school and district level (Burgard 2000, Conyers and Ewy 2004, Glasser 1990, Jenkins 2003, Langford 2003, Langford and Cleary 1995, RISC 2002).

The US Baldrige award for education was introduced in 2002, to recognise the improvement efforts of educational institutions.

The Australian Quality Council was the first to introduce Quality Improvement to the Australian School education system through the Quality in Schools program in 1997 (AQC 2002a).

What is Quality Improvement in Teaching and Learning?

Quality Improvement provides strategies and methods to ensure a high degree of learning is achieved by all students, and to engage the whole school community such that the continuous improvement of learning is an integral part of everyone’s role, and a way of life in the school and its classrooms.

A key feature of improving the quality of learning is to increase the extent to which students are responsible for their own learning and intrinsically motivated to learn (Burgard 2000, Jenkins 2003, Langford 2003, Langford and Cleary 1995, QLA 2007a).

“Quality Learning is a new way of thinking about education – one that will help students and teachers take responsibility for their own learning, give them tools to solve problems and provide the means to understand how specific learning processes fit into a larger system of learning with predictable characteristics… It is important to understand that it is not another program or strategy, but a way of seeing, so that all programs and strategies used in a classroom are understood in terms of their contribution to the aim of the system that is in place” (Langford and Cleary 1995).
Traditional Teaching versus the Quality Improvement Approach

In the school and classroom, as previously discussed for industry, there are many differences between traditional approaches and those of Quality Improvement.

Table 2.6 contrasts the more traditional approach to classroom teaching and learning with those of the Quality Improvement approach. The principles of Quality Improvement have been used to structure this comparison as they encapsulate the theory and are reflective of Deming’s System of Profound Knowledge (AQC 2002a, Deming 1994, QLA 2007).

One of the main aims and outcomes of the Quality Improvement approach is to significantly change the nature of the relationship between teacher and student (as with industry, where the nature of the relationship between manager/supervisor and worker are changed.)

The following model (Figure 2.24) illustrates a spectrum of the type of relationships that may exist in the classroom between teacher and student (Langford 2006, QLA 2007a).

In a traditional classroom, a ‘Do-To’ student/teacher relationship exists. The teacher has total control, giving orders for the student to carry out. Students seek teacher approval for everything they do. They see the purpose in the work they do as pleasing the teacher and are extrinsically motivated through reward and punishment to achieve better results.

Figure 2.24 Teacher-Student Relationship Continuum
In a classroom applying the *Quality Improvement* approach teacher control is significantly decreased as the student assumes greater responsibility for learning. Teachers are mediators of the learning experience. They spend more time working with students to improve the learning process, than on discipline, assessing and grading work. Teacher stress and workload are much reduced. The classroom thrives on a climate of purpose and trust. Levels of learning, productivity and achievement are high.

Students are actively involved in the learning process. They are intrinsically motivated to learn and achieve. The emphasis is on students developing the capacity to be proactive independent learners. They set goals, evaluate the quality of their own work and track progress, participate in the planning and decision-making process associated with their learning. There is shared focus on learning how to learn (QLA 2007a).

**Examples of Quality Improvement Methods Applied to the Classroom**

**Using the Plan-Do-Study-Act (PDSA) Cycle to Learn and Improve**

The PDSA Cycle is a structured approach to improvement. Based on the Kolb learning cycle, it was made popular by Deming and builds on the work of Dewey (of library cataloguing fame) and Shewhart (Deming 1994, QLA 2007b, Scholtes 1998).

Figure 2.25 illustrates the cycle in action (Scholtes 1998, p34).
The cycle is a scientific approach to improvement that ensures:

- clarity as to the purpose and goals of the proposed improvement
- agreement as to how improvement success will be measured and monitored
- an understanding of the deficiencies in the current situation and the causes of those deficiencies
- the development and implementation of a detailed and agreed improvement plan
- evaluation of success of the plan and the determination of appropriate next steps.

In a school it can be used by teams or individuals, for whole-of-school improvement, or by a teacher and students to improve learning in the classroom (QLA 2007b).

**An Example of PDSA Use in the Classroom:**

“Jordan is a Year 1 student (Figure 2.26). He wants to improve the quality of his handwriting. He is setting out to improve his writing skills, applying the PDSA cycle to writing about what he did on the weekend. Jordan’s teacher works with the class to brainstorm the quality characteristics (criteria) of good handwriting.

**Plan** - Jordan uses the quality criteria to plan his work, deciding what he will write about. **Do** - Jordan completes his writing, referring to his plan. **Study** - Jordan uses the quality criteria to self-assess his work. **Act** - After identifying that ‘straight lines’ are his major opportunity for improvement, Jordan acts upon this by rewriting his story, focusing on improving this area” (QLA 2007c pp6-7).

![Figure 2.26 Student (Jordan) Using PDSA to Improve his Handwriting](image)
The Capacity Matrix
The Capacity Matrix is a Quality Improvement charting technique created by David Langford and Myron Tribus (Langford 2006, QLA 2008, Tribus no date). The matrix helps students to understand WHAT they need to learn. It details learning outcomes in terms of the capacities and skills to be developed, and depth of learning to be achieved (Figure 2.27).

“Working together, students and teachers define the specific competencies which are to be attained and the levels of competency required” (Tribus no date).

The learner uses the matrix to self-assess progress against each capacity and to plan, monitor and record their learning as it develops. It also provides a summary of the evidence to demonstrate that learning has been achieved. Frequently, this evidence is collated in a learning portfolio (QLA 2008).

An Example of the Capacity Matrix in Use in the Classroom

“Megan is a Year 1 student. Her teacher uses Capacity Matrices to accelerate student learning in spelling (Figure 2.27). Working at their own pace, the students progress through words in each matrix. In each case, they need to demonstrate growth in their learning through the following stages: ‘I have heard of the word’, ‘I can read it’, ‘I can spell it’ and ‘I use it in my work’. Megan and her classmates are always very excited when they complete another matrix” (QLA 2008 p5).

![Figure 2.27 Capacity Matrix for Spelling](image-url)
Whole School Radar Chart

The Radar Chart is a Quality Improvement tool used to plot school performance data. It displays data relating to a broad range of key performance indicators on a single chart and summarises performance over several years (Figure 2.28) (Jenkins 2003, QLA 2007b).

The chart details how the school system is performing, tracking progress over time, exposing relationships in performance, and allowing for prediction of what can be expected in future. Schools report that the Radar Chart promotes increased and shared understanding, and a focus on improvement. It engages staff in a meaningful way with school performance data, stimulating professional discussion (QLA 2007b).

There is much anecdotal data suggesting that the Quality Improvement approach does benefit schools and student learning. This next section describes some of the data reported in the literature. However, more rigorous evaluations are needed in order to assess the impact of the approach on school performance and productivity.
Effectiveness of the Quality Improvement Approach in Schools

The following is an overview of the limited information available illustrating the impact of the Quality Improvement on schools and classrooms, both overseas and in Australia.

United States

The Re-inventing Schools Coalition (RISC)

In 2005, the Re-inventing Schools Coalition (RISC) based in Alaska, commissioned the University of Maine, to undertake an analysis of the impact their improvement initiative involving over 200 Alaskan schools. The purpose of the research was to test for correlation between stakeholder perceptions of the extent of application of RISC’s school improvement model – the Quality Schools Model – and student achievement data.

The RISC Quality Schools Model is based on the Quality Improvement approach, focusing school effort on leadership, shared vision, standards-based design and continuous improvement.

The study involved 642 participants, representing 47 percent of the population and covered the four-year period from 2000 to 2004. It found that stakeholder perception relating to deployment of the Quality Schools Model (QSM) in their schools; ‘positively and significantly correlated’ with student achievement. Higher levels of achievement were found in those districts reporting greater deployment of the model. Figure 2.29 shows a typical example of the extent of improvement achieved in student learning outcomes for reading, writing and mathematics.

Leander Independent School District (LISD)

Leander Independent School District is in Texas, USA. In 2007 the district was responsible for the learning needs of almost 24,000 students. This was an increase of over 2,000 students from the previous year. The district is the fastest-growing school district, with real estate purchased by parents for the main purpose of ensuring their child’s enrolment at one of the district’s schools. The district has been applying the Quality Improvement approach since 1994 across all of its 27 schools.
The following examples of the district’s data and comparative test scores demonstrate the significant improvement achieved (Figures 2.30 to 2.33) (LISD 2008). Figure 2.30 shows the dramatic (and continuous) improvement realised in Mathematics by students across the district reaching minimum expectations for each year level from grade 3 through to exit year, for the eight years from 1994 to 2001.
Figure 2.31 shows the dramatic (and continuous) improvement realised in Writing by students across the district reaching minimum expectations for Grade 4, Grade 8 and Exit, over eight years from 1994 to 2001.

Figure 2.31 Percentage of Leander District Students Meeting Minimum Expectations for Writing

Figure 2.32 shows the difference realised in Reading achievement demonstrated by students from the Leander District compared to the Texas State average across all year levels from grade 3 through to exit year.

Other US Schools and Districts

The following are achievements reported by other schools and districts in the US that have deployed the Quality Improvement approach:

- The Jenks Public School District, a 2005 Malcolm Baldrige National Quality Award recipient, reported a decrease in student dropout rates from 6.3 percent in 1999, to 1.2 percent in 2004. Graduation rates have risen, with rates at 93 percent in 2003, 94 percent in 2004, and 95 percent in 2005 (ASQ 2008)
Richland College reported an increase in the number of students who complete the core curriculum in preparation for transfer to other institutions has grown from 500 students in 2002 to 1,660 in 2005. Enrolments have increased from 12,500 to 14,500 students between 2000 and 2005 (exceeding local competitors). Student satisfaction levels have exceeded the national norm over the past four years, and 22 former employees have been appointed as presidents of other colleges (NIST 2005).

The Clark County School District accommodated a rapidly expanding student population while achieving $174 million in cost savings over 10 years (ASQ May 2006).

Kingsley Elementary school’s Quality Improvement approach to writing excellence improved student scores on achievement tests by 49 percent in one year and 68 percent over four years. (ASQ 2008).
Australia

A survey into the perceptions of participants as to the impact of the Quality in Schools program was conducted by Quality Learning Australia (QLA) in 2005. The survey was designed to explore the nature and impact of participation in the programs and the extent to which benefits had been sustained by the school. Schools were asked to respond to a series of qualitative and quantitative questions derived from the objectives of the program during a telephone call. Data was collected as to the perceptions and experiences of respondents by telephone interview (QLA 2005).

Findings showed respondents were generally very positive about their experience with the program, and reported significantly positive responses with respect to the impact of the program on:

- school leadership
- students taking increased responsibility for their learning. (Figure 2.33 is a column chart illustrating respondent perception data relating to students taking increased responsibility for their learning. Fifty-five percent of respondents reported that the Quality in Schools program had a positive to outstanding impact on students taking responsibility for their learning) (QLA 2005, p11)
- the development of a culture of continuous improvement
- continuing to apply what was learned. (Figure 2.34 is a column chart illustrating respondent perception data relating to whether what was learned during the Quality in Schools program was still being applied across the school. Eighty-nine percent of respondents reported that learning from the program had been sustained) (QLA 2005, p8)
- the overall impact of the program. (Figure 2.35 is a column chart illustrating respondent perception data relating to the overall impact of the Quality in Schools program. Over seventy-seven percent of respondents reported that the program had a positive to outstanding impact on the school) (QLA 2005 p9).
Figure 2.33  QLA Survey Results 2005: Student Responsibility for Learning

Impact on Students Taking Responsibility for Learning

Figure 2.34  QLA Survey Results 2005: Continued Application of Learning by Schools

Extent to which school is still applying what was learned
Anecdotal Data from Australian Schools

As discussed earlier in this section, the only statistical data available relating to the impact of the deployment of the Quality Improvement approach in education currently, relates to studies conducted overseas. There is only anecdotal and perception data from schools suggesting that significant benefit is being realised through deployment of the approach. Examples of the benefits reported include:

Seaford 6-12 School in South Australia is a large secondary college of 950 students. The school commenced the adoption of the Quality Improvement approach in 2000, and since that time has achieved improvement every year in student engagement and learning, staff morale, and parent perception.
The *Radar Chart* in Figure 2.36 illustrates the continuous improvement achieved by the school for an extensive range of key performance indicators over the period 2002 to 2006. These include learning outcomes, staff, student and parent satisfaction, enrolments, attendance and student retention.

![Figure 2.36 Seaford 6-12 School Radar Chart Showing Continuous Improvement of School Performance](image_url)

In March 2007 the school was recognised by the Australian Government for sustained improvement receiving the prestigious *Medal of Distinction* as the most outstanding *Best National Achievement* winner in the *National Awards for Quality Schooling*. 
Tallangatta Secondary College in Victoria, claimed significant improvement in student behaviour and a marked reduction in the number of disciplinary incidents, as a result of involving students in identifying shared values and behaviours replacing the imposition of school rules (AQC 2002).

Figure 2.37 shows the Tallangatta Secondary College ‘Values Wheel’ the values and behaviours illustrated in the diagram were identified and agreed to by all of the 350 students of the school. The ‘wheel’ is posted around the school and is used by staff and students to guide behaviour and as the basis for discipline.
A teacher from **Simpson Primary School** in Victoria worked with her students to improve the classroom ‘Lining-Up Process’. They collected data that showed an average of 20 minutes a day was wasted lining up after recess, lunch and before starting class in the morning. (The teacher calculated that she had spent over a year of her teaching career waiting for students to line up!). By working together to improve the process, they now enjoy an extra 20 minutes a day to devote to more worthwhile learning activities (QLA 2007a).

Another teacher from **Roxburgh Homestead Primary School** in Victoria worked with students to improve the time it takes for them to ‘get organised’ for their learning. The improvement achieved is illustrated in Figure 2.38 which is the Run Chart of the class data showing their progress over three terms (QLA 2007a).

Many teachers have reported the positive benefits realised with respect to improved student behaviour and learning outcomes. A greater number of students are engaged in their learning and reaching benchmark standards (QLA 2006, QLA 2007a).

![Run Chart for Getting Organised](image)

**Figure 2.38** Roxburgh Homestead Primary School Run Chart
Showing Improved Student Performance in ‘Time to Get Organised’
To date an in-depth evaluation of the Quality in Schools program or the application of the Quality Improvement approach by Australian schools has not been undertaken. This study, conducted two to three years after the program ended, will help to fill this gap by determining whether a statistically significant relationship exists between application of the approach and improvement in the performance in Australian schools, and assessing the endurance of the philosophies imparted.

**Quality Improvement - the Barriers**

“An Ernst and Young study of 584 companies in the US, Canada, Germany and Japan found that the majority of Quality initiatives failed to achieve significant improvement” (Russell 2006).

“It is generally accepted that when TQM has failed, it is not because there was a basic flaw in the principles of TQM, but because an effective system was not created to execute the TWQM principles properly” (Shin et al. 1998, p1).

The following factors are highlighted in the literature as barriers associated with implementation of the Quality Improvement approach. Reports as to problems intrinsic to the philosophy itself were not found, the barriers discussed related to problems with the process of implementation (Adebanjo and Kehoe 1998, Crosby 1984, Fellers 1999, Hau 2000, Jurow and Barnard 1993, Masters 1996, Masters 1997, Quasi and Padibjo 1998, Young et al. 1997).

Studies reported in the literature related to experience in either industry or higher education. There were no reports available as to the barriers associated with the implementation of Quality Improvement in primary or secondary educational settings.

**Leadership**

The literature consistently emphasises the importance of the commitment and involvement of senior leadership as a major contributor to success with the Quality approach.
Implementation frequently involves extensive cultural change within an organisation. This takes time and requires a constancy of focus over an extended period (Crosby 1984, Hau 2000, Masters 1996, Masters 1997). Deming estimated that the time to fully incorporate the Quality approach into a culture to be between three to five years (Deming 1994). It appears few organisations have the courage and strength of leadership to persist over the longer term.

“Organisations are frequently impatient and often focus on the ‘quick fix’ for obtaining results” (Hau 2000, p1).

Leaders must demonstrate unrelenting commitment to, and role model, the underpinning principles, supporting one another and others throughout the organisation as they learn together to bring about the changes needed.

“If employees see discrepancies in what management says and what it does, they will lose interest and faith in TQM” (Hau 2000, p1).

Management must create an environment of trust, one that celebrates success, and embraces failure as a learning experience and open communication processes so everyone remains informed and is consulted.

**Knowledge and Experience**

“… All the employees who need to know are taught until all of them understand. The one’s that didn’t need to know then, but do need to know now are taught. A routine instruction operation is set up to make certain that all new employees, regardless of level, achieve the same comprehension as everyone else…” (Crosby 1984, p98)

The adoption of the *Quality Improvement* principles and methods by an organisation usually requires continuous learning and professional development over an extended period at all levels of the organisation. The thinking and methods are not taught traditionally in school or at tertiary level (Amar and Zain 2001, Hau 2000, Salengna and Fezel 2000).

*Quality Improvement* brings with it a new language which takes time to learn. The literature reports objections by employees to terms such as ‘quality’ which implies that high standards are not already being achieved (Jurow and Barnard 1993).
Learning from the organisation’s unique process of adoption and sharing experiences and learning across the organisation is critical (Russell 2006).

**Shared vision, planning and the use of data**

A lack of clarity and a shared vision and understanding of the implementation plan intended to deliver the vision, is another barrier reported in the literature. Incorporating and integrating continuous improvement activity as a strategic goal and critical component of key leadership and management processes (Russell 2006, Hau 2000, Salengna and Fezel 2000, Amar and Zain 2001, Crosby 1984).

“...The reason very little changes is that implementation is not tackled in a methodical manner as a matter of corporate priority” (Crosby 1984, p97).

The absence of a measurement system to assess progress and inform ongoing decision-making inhibits the adoption of the Quality approach. Establishing clear and effective measurement and feedback systems appears essential to success (Crosby 1984, Hau 2000, Russell 2006).

“...An objective is described, a team is put together to design the approach, and the company moves methodically through the process. Measurements are taken all along the way and course corrections made as required” (Crosby 1984, p98).

**Investment of time, financial and human resources**

Implementation requires significant investment of time, financial support and human resources. Leadership must also be prepared to encourage and provide the resources necessary for high involvement by everyone in the organisation in the implementation process. Handing authority over to teams and empowering individuals to make decisions and voice their ideas and concerns relating to quality and improvement – relinquishing control and developing employee ownership for quality is a key change to the daily operation of the organisation (Hau 2000, Russell 2006, Salengna and Fezel 2000).

Teamwork is an essential element of the approach. If the organisation’s structure is not conducive to teams working together, restructuring of the organisation may be required (Hau 2000).
Conclusion

This chapter described a review of relevant literature in order to provide the necessary context, background and information to support the research. The chapter:

- detailed the structure and features of the current Australian school education system
- discussed the need to improve the school education system including an overview of current school performance data, contrasting it with that being achieved worldwide. Also exploring other indicators that show the school education system is in need of attention including, low teacher morale, decreasing parent satisfaction, and the changes needed to align pedagogical practice with recent developments in brain functioning
- provided an overview of recent attempts to improve the school education system, and discussed the impact of these improvement initiatives
- outlined the evolution of the Quality Improvement approach and its impact on the performance and productivity of industry
- considered the application of the Quality Improvement business model to school education, contrasting the approach with traditional teaching and learning practices. What has been reported by way of improvement in student learning outcomes and other school performance indicators through application of the model in school education systems to date was also explored
- discussed the limitations of the Quality Improvement approach – the major barriers to success in applying the theory, strategies and methods.

The chapter concluded by explaining the need for an evaluation of the impact of Quality Improvement approach on the performance of Australian schools. Also, the difficulties experienced by industry in adopting the approach, representing barriers to be anticipated in adoption by the school system.

Chapter Three introduces and discusses the methodology used for this evaluation.
This page intentionally blank.
Chapter Three

Methodology

Introduction

The purpose of this chapter is to describe the research methodology used to achieve the aims and objectives of the study.

The chapter discusses:

- the research process
- the theoretical or conceptual framework used
- the research questions and related hypotheses
- the design of the data collection instrument and process
- selection of the sample group of schools from the total population of schools that participated in the Quality in Schools program. How these schools were approached and implementation of the data collection process
- how the Control group of schools was selected, approached, and the data collection process deployed
- the comparative use of Like School Group data
- the processes selected for data analysis.
Terminology

Quality Schools and Control Schools

The schools that took part in the Quality in Schools program are referred to as ‘Quality’ schools and the schools used for comparative purposes that did not take part in the program are referred to as ‘Control’ schools.

Depth of Deployment

The term ‘depth of deployment’ refers to the degree to which the schools have applied the Quality Improvement philosophy. This is a critical element of the methodology, introduced in this chapter. The depth of deployment is measured by a self-assessment score.

The Research Process

Research may be defined as:

“A systematic, careful inquiry or examination to discover new information or relationships to expand and verify existing knowledge for some specified purpose” (Bennet in Ticehurst and Veal 2000, p2).

Scientific research may be defined as:

“Investigation conducted within the rules and conventions of science. This means that it is based on logic, reason and the systematic examination of evidence. Ideally, within the scientific model it should be possible for research to be replicated by the same or different researchers and for similar conclusions to emerge” (Ticehurst and Veal 2000, p2).

Sekaran (1992) outlines a ‘hypothetico-deductive’ scientific research process that has been used as the basis for this study (Figure 3.1).
Figure 3.1  The Research Process

The process comprises eight steps through three major phases. The first phase (Steps 1 to 6) concludes with the development of a conceptual framework for the study, the research hypotheses and design. It is followed by the second phase (Step 7) which encompasses the data collection and analysis component. The third and final phase (Step 8) involves the derivation of the research findings and conclusions.

Steps one (Observation), two (Preliminary Data Gathering) and three (Problem Definition) of the research process, are discussed in chapters one and two of this dissertation. This chapter (three) discusses steps four (Theoretical Framework), five (Generation of Hypotheses), six (Scientific Research Design) and seven (Data Collection and Analysis). Step eight (Findings and Conclusion) is discussed in chapters four, five and six.
The Theoretical or Conceptual Framework

The Theoretical Framework is a conceptual model that describes (theorises) the relationships existing between the critical factors or variables to be explored through the research. It provides a basis for the formulation of the research hypotheses, and is therefore central to the study (Sekaran 1992).

“The Theoretical Framework discusses the interrelationships among the variables that are deemed to be integral to the dynamics of the situation being investigated” (Sekaran 1992 p 63).

The identification of the variables relevant to the research is therefore an essential step in establishing the Framework.

The Research Variables

“A variable is anything that can take on differing or varying values” (Sekaran 1992 p64).

There are two types of variable relevant to this research: the Dependant Variable and the Independent Variable.

Dependent Variable

The dependent variable is the variable of primary interest to the research. The study aims to explain or predict the variability in the dependent variable. It is the main variable relating to the focus of the research being undertaken and usually relates to the effect being investigated.

There are two dependent variables in this study, namely; school performance and school improvement.
Independent Variable

An independent variable is considered to impact, influence, facilitate, restrain or accompany a change in the dependent variable, in either a positive or negative way. Where there is a change – increase or decrease - in the independent variable or variables, there is an increase or decrease in the dependent variable or variables (Hair et al. 2005, Sekeran 1992, Ticehurst and Veal 2000).

The independent variable under investigation in this study is the depth of deployment of the *Quality Improvement* philosophy by the schools.

The diagram in Figure 3.2 depicts the relationship between the independent and dependent variables of this study.

![Figure 3.2 Relationships between the Research Dependent and Independent Variables](image)

Summary of the Theoretical Framework of the Research

The dependent variables of this research are school performance and improvement. They are the variables of primary interest.

The variation observed in school performance and improvement is to be explained by the independent variable – the extent (depth) to which the *Quality Improvement* approach has been applied within the school setting.
The greater the depth of deployment of the thinking, strategies and tools of Quality Improvement by a school, the greater its performance and improvement is expected to be.

Participation in the Quality in Schools program - is expected to positively influence school performance and improvement. Schools that participated in the program are expected to have achieved a greater depth of deployment of the Quality Improvement approach, leading to higher levels of performance and improvement, compared to schools that did not participate.

The Research Questions and Hypotheses

Having established the Theoretical Framework describing the logical relationship/s predicted between the variables under investigation, and defining the research questions, the theories, or hypotheses, to be tested are developed.

“A hypothesis is a proposition suggesting how something might work or behave – a potential explanation that may be supported or negated by data… the key creative part of the research process…” (Ticehurst and Veal 2000, pp22-23.)

The hypotheses are directly linked to the research questions (introduced in chapter one).

The research questions and hypotheses underpinning the aims of the study are summarised in Table 3.1.

Figure 3.3 illustrates the relationships that exist between the research hypotheses.

The research hypotheses are tested to ascertain whether the proposed relationships hold true.

Research design is the next phase of the research process and involves developing methods of data collection and analysis in order to test the hypotheses.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than schools that did not participate in the program?</td>
<td><strong>Hypothesis 1</strong> - The schools that participated in the Quality in Schools program have deployed the Quality Improvement approach to a greater degree than the Control schools that did not participate in the program.</td>
</tr>
<tr>
<td>2. How does adopting the Quality Improvement approach impact upon school performance?</td>
<td><strong>Hypothesis 2</strong> - The greater the depth of application of the Quality Improvement approach by a school; the greater the school’s performance measured in terms of:</td>
</tr>
<tr>
<td></td>
<td>• student achievement (at one point in time)</td>
</tr>
<tr>
<td></td>
<td>• staff satisfaction (at one point in time)</td>
</tr>
<tr>
<td></td>
<td>• parent satisfaction (at one point in time).</td>
</tr>
<tr>
<td>3. Do the schools that participated in the Quality in Schools program show greater improvement than schools that did not participate in the program?</td>
<td><strong>Hypothesis 3</strong> - The rate of school improvement of the schools that participated in the Quality in Schools program is greater than the Control schools that did not participate in the program measured in terms of:</td>
</tr>
<tr>
<td></td>
<td>• improvement in student achievement (over time)</td>
</tr>
<tr>
<td></td>
<td>• improvement in staff satisfaction (over time)</td>
</tr>
<tr>
<td></td>
<td>• improvement in parent satisfaction (over time).</td>
</tr>
<tr>
<td>4. What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the Quality in Schools program as for the schools that did not?</td>
<td><strong>Hypothesis 4</strong> - The challenges to school improvement experienced by schools that participated in the Quality in Schools program are different to those experienced by Control schools that did not participate in the program.</td>
</tr>
</tbody>
</table>

**Table 3.1  Research Questions and Hypotheses**
Research Design

Research design involves determining how the study data are to be collected. It includes how the sample of schools is selected, the use of a Control group of schools, and how the necessary data are collected and analysed. This requires careful consideration of the overall purpose of the study, the hypotheses being explored, and the nature of the investigation.

Purpose of the Study

The purpose of this study is to test the hypotheses discussed in the previous section. The hypotheses relate to exploring the relationships that exist between the application of a Quality Improvement business model and school performance and improvement.
Specifically, the aims of the research (as discussed in chapter one) are:

1. To determine the extent to which the *Quality Improvement* business model is relevant, transferable and of use in effecting Australian school and classroom improvement.

2. To determine the extent to which the application of the *Quality Improvement* business model has led to performance improvement by participating schools compared to that achieved by non-participating schools.

3. To identify the major challenges experienced by schools in affecting improvement to inform the design and deployment of future school change initiatives and the improvement of education systems.

To develop a methodology to evaluate school improvement initiatives.

The methodology must therefore be constructed in a way that allows for these aims to be achieved.

**Investigation Overview**

**Correlational Study**

The research is considered a correlational study, in that it aims to investigate the association or relationship that exists between deployment of the *Quality Improvement* approach and school performance and improvement. Where dependent and independent variables are found to be related in a systemic way, they are said to be correlated.

**Statistical Significance**

The testing undertaken explores the degree of statistical significance existing for the relationship between the variables. That is, the degree to which the relationship observed between the variables can be considered ‘real’ and unlikely to have happened by chance (Ticehurst and Veal 2000).
Experimental versus Non-experimental Research

A quasi-experimental method was used to investigate the differences in performance and improvement between the schools that participated in the Quality in Schools program with a matched set of non-participatory Control schools. The research is considered quasi-experimental in that the environment in which the study takes place is partially controlled by the researcher. That is, the environment of the Quality and Control schools is controlled with respect to whether or not the schools were participants of the Quality in Schools program (Ticehurst and Veal 2000).

Researcher Influence/Interference

The study employed a positivist approach. This is where the researcher is considered external, independent and objective to the study and the environment in which the research takes place. The opposite view to this is the critical interpretive approach where it is considered that the researcher cannot be separated from the research environment and is therefore seen to be a part of the research process. A correlational study implies that the investigation is undertaken in ‘the natural environment of the organisation’ with minimal interference or influence by the researcher (Sekaran 1992, p102).

Unit of Analysis

“The unit of analysis refers to the level of aggregation of the data during subsequent analysis” (Sekaran 1992, p106).

The research questions determine the unit of analysis. In this study the unit of analysis is focused at the school level. That is, the analysis of data relating to individual schools that participated in the Quality in Schools program and matched Control schools that did not.

The Use of Primary and Secondary Data

The study used primary data, in that it generated new information collected as part of the research process. The primary data used related to the measurement of the research independent variable – school deployment of the Quality Improvement approach.
The study also involves the use of pre-existing or secondary data. The secondary data used relate to the measurement of the research dependent variable - school performance and improvement (Ticehurst and Veal 2000).

**Duration and Timing of the Study**

The study is considered cross-sectional research in that the primary data from each school is collected only once in order to answer the research question. In terms of the secondary data used it was a longitudinal study, as the school key performance indicator data used was collected over three years for each school (Sekaran 1992).

The primary data were collected from schools in the Quality and Control samples during the twelve month period from May 2007 to May 2008.

A pilot was conducted with four schools prior to this for the purpose of testing the data collection instrument and methodology during late 2006.

A minimum amount of time (three years), between completion of participation in the *Quality in Schools* program and the commencement of data collection was allowed:

- to ensure sufficient time for schools to apply what was learned from the program and embed new practice into normal school operations
- for schools to realise any impact and benefits due to the program
- to allow for sufficient time to have passed to evaluate the sustainability of the approach.

**Measurement of the Research Variables**

The number of variables measured in any study is critically important. It is generally considered wise to use as few variables as possible to provide the information required. Other criteria that also need to be considered in selecting the variables include sample size, cost, availability, reliability, meaning and the relationships between the variables selected (Tabachnick and Fidell 2007).

This study focused on two dependent variables and one independent variable.

The following section discusses the measurement of the research variables using the primary and secondary data.
Measurement of the Dependent Variables: School Performance and Improvement using Secondary Data

The first dependent variable is measured as school performance at one point in time. The second dependent variable is measured as school improvement over time.

The same three categories of measures were selected to assess school performance and school improvement. These measures are key performance indicators (KPIs) used routinely by the Victorian Department of Education. They were considered appropriate for assessing school performance and improvement for the purposes of this research in that they were representative of:

- the core business of the school – student learning outcomes
- client perception of the organisation – the opinion of the parents of students attending the school with respect to school effectiveness
- employee perception of the organisation – the opinion of the staff of the school, reflecting the general ‘health of the organisation’.

Other criteria considered in selecting these measures included data accessibility and availability over an extended time period. The measures selected were routinely used for school accountability and reporting purposes and related to key performance indicators used by schools including staff morale, parent satisfaction, and student learning outcomes. The data were readily accessible as an annual report (i.e. the School Level Report), prepared by the Victorian Department of Education for each school, using data inputted by the school over each twelve month period.

Each school was asked to provide a copy of their 2005 School Level Report. The report included data relating to 2005 and historical data from 2003 and 2004.

Restrictions in the use of Secondary Data

The secondary data used were restricted to the years 2003, 2004 and 2005 due to changes made to the methodologies used to collect the data by the Victorian Department of Education.
Changes to the curriculum in 2005 meant that data obtained between 2003 and 2005 relating to student achievement, could not be directly compared to that collected for 2006 and 2007.

Changes to the questions contained within the parent and staff opinion surveys restricted the number of questions for which data were available over an extended period for comparative purposes. For this reason, only one question from each of the surveys was included in the study.

The following is a description of each of the measures used.

a. Student Learning Outcome Data (Curriculum Based Assessment)

This measure related to teacher assessment of student learning progress against mandated curriculum benchmarks, for reading, writing and number (mathematics).

These measures are reported annually for each student year level (cohort) from preparatory to year 10 to the Victorian Department of Education and Training. The data are collated by the Department and form part of the annual School Level Report. The data are collated and reported as a ‘School Mean’, a ‘Like School Group Mean’ and a ‘State Mean’.

The data selected for use in the study relate to the year 2005 for school performance and the years 2003, 2004 and 2005 for school improvement over time. Year 6 data were used for the primary schools, and year 10 data were used for the secondary schools studied. Years Prep to 6 data were used for analyses involving a more detailed investigation of the primary schools.

The data for Year 6 and 10 were selected because they represented the most senior level of student data available for each of the school types. This was based on the proposition that more senior students would have had greater opportunity for exposure to the Quality Improvement methods. This was also to reduce the number of analyses necessary were all twelve student year levels of data to be used for each school.
b. Student Learning Outcome Data (Statewide Test Results)

This measure related to the results of a mandated annual standardised State-wide test (the Achievement Improvement Monitor (AIM)) for reading and number (mathematics).

This standardised testing is undertaken by students in Year 3 and 5 in primary schools, and year 7 and 10 in secondary schools. The data are collated and reported annually by the Victorian Department of Education as part of the School Level Report.

The data selected for use in the study related to the year 2005 for school performance and the years 2003, 2004 and 2005 for school improvement over time. Year 5 data were used for the primary schools, and year 7 data for the secondary schools studied. Again, years 5 and 7 were selected because they represented the most senior level of student testing data available for each of the school types. This was again based on the proposition that more senior students would have had greater opportunity for exposure to the Quality Improvement methods.

c. Staff Opinion Data (School Morale)

This measure related to “School Morale” data collected annually from the staff of each Victorian school as part of an Organisational Health Survey by the Victorian Department of Education. The survey is confidential and completed by staff online. Results are provided to the school in graphical and tabular format as part of the School Level Report (VIC DET 2004a).

In collecting the data relating to “School Morale”, staff are asked to rate the school’s performance by scoring on a scale of one to five; where one is strongly disagree, and five is strongly agree, to the following statements:

- “There is a good team spirit in this school”
- “There is a lot of energy in this school”
- “The morale in the school is high”
- “Staff go about their work with enthusiasm”
- “Staff take pride in this school.”
The data used in the study relate to the year 2005 for school performance and the years 2003, 2004 and 2005 for school improvement over time.

**d. Parent Opinion Data (General Satisfaction)**

This measure related to the “General Satisfaction” of parents of students with respect to the standard of education services provided by the school. The data are collected annually as part of a *Parent Opinion Survey* by schools and collated by the Victorian Department of Education. The data are reported as part of the annual *School Level Report* (VIC DET 2004b).

To collect the data relating to “General Satisfaction”, parents are asked to rate the school’s performance by scoring on a scale of one to five; where one is strongly disagree and five is strongly agree, to the statement: “Overall, I am satisfied with the education my child receives from their school”

The data used in the study relate to the year 2005 for school performance and the years 2003, 2004 and 2005 for school improvement over time.

Table 3.2 summarises the measures or key performance indicators (KPIs) selected for the study and indicates the labels applied to each measure used.

**Measuring the Independent Variable: School Deployment of Quality Improvement using Primary Data**

The independent variable in this study - the depth of deployment of the *Quality Improvement* philosophy - is measured by way of a participant self-assessed and reported score. Participant allocation of the score reflected their opinion as to the current depth of deployment achieved by the school with respect to the activities, practices and behaviours exhibited in the classroom and school.

The self-assessment instrument asked participants to assess the depth to which the thinking, strategies and tools of *Quality Improvement*, reflected in the twelve *Quality Improvement* principles are being applied throughout the school (AQC 2002a) (Figure 3.4).
<table>
<thead>
<tr>
<th>School Key Performance Indicator (KPI)</th>
<th>Assigned Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Achievement – Reading = Annual teacher assessment of student progress against mandated curriculum benchmarks. For school performance 2005 data, for school improvement 2003 to 2005 data. Year 6 primary schools, Year 10 secondary schools or Years Prep to 6 for primary schools.</td>
<td>KPI 1</td>
</tr>
<tr>
<td>Student Achievement – Writing = Annual teacher assessment of student progress against mandated curriculum benchmarks. For school performance 2005 data, for school improvement 2003 to 2005 data. Year 6 primary schools, Year 10 secondary schools or Years Prep to 6 for primary schools.</td>
<td>KPI 2</td>
</tr>
<tr>
<td>Student Achievement – Number (Mathematics) = Annual teacher assessment of student progress against mandated curriculum benchmarks. For school performance 2005 data, for school improvement 2003 to 2005 data. Year 6 primary schools, Year 10 secondary schools or Years Prep to 6 primary schools.</td>
<td>KPI 3</td>
</tr>
<tr>
<td>Student Achievement – Reading AIM = Results of a mandated annual standardised State-wide test (Achievement Improvement Monitor). For school performance 2005 data, for school improvement 2003 to 2005 data. Year 5 primary schools, Year 7 secondary schools.</td>
<td>KPI 4</td>
</tr>
<tr>
<td>Student Achievement – Number (Mathematics) AIM = Results of a mandated annual standardised State-wide test (Achievement Improvement Monitor). For school performance 2005 data, for school improvement 2003 to 2005 data. Year 5 primary schools, Year 7 secondary schools.</td>
<td>KPI 5</td>
</tr>
<tr>
<td>Parent Opinion – General Satisfaction = Results of an annual school parent satisfaction survey. For school performance 2005 data, for school improvement 2003 to 2005 data.</td>
<td>KPI 6</td>
</tr>
<tr>
<td>Staff Opinion – School Morale = Results of an annual school staff satisfaction survey. For school performance 2005 data, for school improvement 2003 to 2005 data.</td>
<td>KPI 7</td>
</tr>
</tbody>
</table>

Table 3.2 Summary of Measures: School Key Performance Indicators used in the Research
### The Twelve Principles of Contemporary Quality

1. Clear direction allows organisational alignment and a focus on the achievement of goals
2. Mutually agreed plans translate organisational direction into actions
3. Quality and value are determined by the client
4. To improve the outcome, improve the system and its processes
5. All people work in a system, outcomes are improved when people work on the system
6. Effective use of facts, data and knowledge leads to improved decisions
7. All systems and processes exhibit variability, which impacts upon predictability and performance
8. The potential of an organisation is realised through its people’s enthusiasm, resourcefulness and participation
9. Continuous improvement and innovation depend upon continual learning
10. The organisation’s actions to ensure a clean, safe, fair and prosperous society enhance the perception of its value to the community
11. Sustainability is determined by an organisation’s ability to create and deliver value for all stakeholders
12. Senior leadership’s constant role modelling of these principles, and the creation of a supportive environment, are necessary for the organisation to reach its potential

*Figure 3.4 Twelve Principles of Contemporary Quality*

### Development of the Primary Data Collection Instrument

Data can be collected in various ways, in different settings and from different sources. Ticehurst and Veal (2000) suggest that there is no one research approach or methodology that is superior to another:

“The most important consideration is the rigour with which one selected method is applied and the insights it provides to the problem being investigated” (Ticehurst and Veal 2000, p19).

The method selected for collection of the primary data relating to the independent variable of this investigation is an administered self-assessment producing quantitative data.
This study is therefore considered quantitative research in that it involved the collection, statistical analysis and presentation of numerical information (Ticehurst and Veal 2000).

The instrument used for the self-assessment process was designed to explore the extent to which the Quality Improvement approach has been deployed by the school (see Appendix 3). The instrument asked participants to assess the depth to which the thinking, strategies and tools of Quality Improvement were being applied throughout the school.

The Use of Operational Definitions

The nature of the measure for the independent variable to be used in the study is considered subjective in that the data were based upon the perceptions and feelings of the individuals involved. Such variables do not lend themselves to measurement of a physical nature. Therefore, it is necessary ‘to reduce the abstract notions to observable behaviours and characteristics exhibited by those who possess these abstract qualities’ (Sekaran 1992, p150).

The practice of reducing abstract concepts so that they can be measured can be achieved through the process of ‘operationally defining’ the concepts under investigation. This involves examining the behavioural dimensions or properties of the concept in question, and identifying the observable or measureable elements that relate to it (Sekaran 1992).

Instrument Design

The instrument design was based upon the twelve Principles of Contemporary Quality, reflecting the key concepts upon which the approach is based (Figure 3.4). The instrument represented each principle by way of a continuum (or rubric). The continua aimed to operationally define the different stages of deployment of each Quality Improvement principle. Each continuum described the type of organisational activity and behaviour expected at progressively increasing levels of deployment of the concept (see Appendix 3).
Each principle was described through several themes structured by way of rows labelled alphabetically. Each row (theme) comprised six sets of descriptive statements in columns numbered one to six (Figure 3.5).

![Figure 3.5 Primary Data Collection Instrument](image)

An ordinal scale of one to six was applied to each continuum to allow participants to quantify the level of deployment achieved for each concept (Figure 3.5). One is reflective of the lowest level of deployment, and six the highest level. The ordinal scale allowed for grouping and the qualitative identification of the differences between the groups, by applying a quantitative scale to qualitative data.

The first set of descriptive statements, column one of each continuum, represented organisational activities and behaviours displaying very limited application of the Quality principles and practices. The depth and breadth of application increased across each continuum through columns one to six.
The final set of statements, in column six, represented a very deep, broad and integrated understanding and application of the Quality philosophy. Thus the stages on the continua attracted a quantitative score (one to six).

To illustrate this further, one of the twelve concepts being tested is the extent to which the school has achieved clarity and shared understanding of its purpose and vision across the organisation, as expressed in the following principle statement:

“Purpose and Vision - clear direction allows organisational alignment and a focus on the achievement of goals.”

The instrument needed to provide for the quantitative measurement of the depth of deployment of this principle (see Figure 3.5). This is so those schools and their classrooms that have achieved clarity and shared understanding of their purpose and vision can be distinguished from those schools that have not.

For each principle, key themes (in rows labeled alphabetically) were determined that underpin the principle or concept. For the Purpose and Vision principle, six themes were used (rows A to F). The themes were:

- the purpose of the school (row A)
- the school vision (row B)
- the use of the school purpose and vision to inform planning (row C)
- purpose and vision in the classroom (row D)
- purpose and vision in learning (row E)
- the use of quality criteria and visions of excellence (row F).

For each of the themes, the expected observable organisational activities and behaviours were determined and articulated as specific descriptors across the six stages of development in the continuum (columns one to six).

An example descriptor or operational definition for the theme relating to the existence and nature of the school vision is (see Figure 3.5 Row B, Column 5):

“Our vision for the school outlines the excellent school we are seeking to create. Stakeholders provided input to the creation of this vision and it is current.”
Terms within the descriptors were operationally defined where potential ambiguity was considered to be present, to assist participants with the self-assessment and reporting process as follows:

- **None** = 0%, **Few** = 10%, **Some** = 25%, **Many** = 50%, **Most** = 75%,
  **Nearly all** = 90%, **All** = 100%

- **Never** = 0%, **Rarely** = 10 %, **Sometimes** = 25%, **Frequently** = 50%, **Mostly** = 75%,
  **Usually** = 90%, **Routinely** = 100%

In addition to the continua based upon the twelve Quality principles, an additional continuum was added for schools to provide data as to their overall approach to school change and improvement.

**Language**

The Quality Improvement approach, like most disciplines, has a vocabulary associated with it. This vocabulary is considered ‘the language of improvement’ and includes terms such as ‘process and system variation’, ‘special cause’ and ‘common cause’. These terms were introduced to participants during the Quality in Schools program. Participants would therefore be expected to be familiar with the terms used in the instrument if the approach had been effectively deployed and was being applied in the school setting (AQC 2002a).

However, the use of ‘Quality language’ in the instrument was tailored to a minimum level of understanding to assist participants with the self-evaluation.

**Adding Value for Participating Schools**

The instrument was designed to provide benefit to the schools involved. This was to encourage participation in the research project and to help overcome the generally negative perceptions associated with research surveys (time consuming and non-value adding).
The aim of the self-assessment process was to provide a means for schools to:

- engage in dialogue about student learning, school performance and Quality Improvement
- reflect on, measure and celebrate progress in growth of organisational learning and application of the Quality Improvement approach
- identify strengths and opportunities for improvement, to inform future planning and the setting of priorities.

The self-assessment was also designed so that the school could repeat the process periodically to measure progress over time, should they wish to.

The process provided for opportunities for improvement, strengths and issues to be recorded throughout the self-assessment by way of a ‘Parking Lot’. The Parking Lot is a Quality Improvement tool for capturing (parking) ideas in each one of four categories (see Figure 3.6) (Langford 2007, Quality Learning Australia 2003): + - ‘what’s going well?, Δ - ‘what needs improving?, ? - ‘what are the questions?’ and ! - what are the issues or ideas).

The data recorded on the Parking Lot by participants could then be prioritised and used to inform future planning and decision-making by the school.

Figure 3.6 Parking Lot
The Use of Qualitative Data

One of the major aims of the research was as follows:

“To identify the major challenges experienced by schools in affecting improvement to inform the design and deployment of future school change initiatives and the improvement of education systems.”

It was decided that qualitative data be collected to address this specific aim. Each participant undertaking the self-assessment was asked to provide answers to three open-ended qualitative questions. Open-ended questions allow the participant to answer the question in whatever way they choose (Sekaran 1992).

The questions were designed to gather perception data relating to the challenges experienced with affecting improvement in their school. The questions were:

- “What do you consider to be three key characteristics of an excellent school?”
- “What are three things that drive improvement in your school?”
- “What are three things that prevent improvement in your school?”

Additional information was also collected from each participating school to assist with assessing possible challenges (barriers) associated with deployment of the Quality Improvement approach, namely:

- the size of the school (measured in terms of the number of students enrolled)
- the number of years the approach had been deployed (the time period between completion of the training and data collection)
- the number of original members of the team that undertook the professional development remaining at the school
- whether or not the incumbent in the role of senior leader of the school (i.e. the school principal) had changed or was the same person who undertook the professional development.

It was expected that deployment might be weaker in schools that were larger, where training was completed longer ago, where the majority of original team members had left the school, and where there had been changes to the position of senior leader.
Selection of the Sample

Statistical Definitions

Population refers to the entire group of schools the research is to investigate. For this study, all of the one-hundred-and-twelve (112) Victorian primary, secondary, P-12 and special schools that participated in groups one to four between the years 1997 and 2004, of the Quality in Schools program, make up the population.

Element refers to a single member of the population the research is to investigate. That is, any of the individual schools that participated in the Quality in Schools program.

The Population Frame is a listing of all of the elements in the population. This has not been included in this documentation due to the confidential nature and sensitivity of the research data. Schools took part under a promise that their anonymity would be honoured. The population frame is used in the selection of the sample.

A Sample is a subset of the population. It is made up of elements selected from the population. The reasons for using a sample rather than collecting data from the entire population are associated with restrictions as to cost, time and effort. Through careful selection and analysis of the sample it is assumed that generalisations may be made about the entire population.

In this study an experimental sample of schools that participated in the Quality in Schools program and a Control sample of matched schools that did not participate in the program were used.

Statistical Inference makes use of information derived from the sample to draw conclusions (inferences) about the population. The strength of statistical inference is determined by the degree to which the sample is representative of the population (Sekaran 1992, Smith 1993, Ticehurst and Veal 2000).
Representativeness of the Sample

A common goal of survey research is to collect data representative of the population being studied. Sample representativeness is the degree to which the sample data accurately and precisely represent that of the general population. Representativeness is addressed by making certain that sampling locations are properly selected and a sufficient number of samples are collected.

Sample representativeness is critical to the study. Biases can arise from a sample that is not representative of the population.

The strength of a statistical inference is determined by the degree to which the sample is representative of the population; that is, how similar in the relevant areas the sample and the population are. If the sample is representative in several important target variables, then there is increased confidence in the validity of the sample in representing the population. The choice of variables on which one bases the test for sample representativeness depends upon the population and the purpose of study (Barlett, Ktrlik and Higgins 2001, Sekaran 1992, Smith 1993, Ticehurst and Veal 2000).

Sample Size

The sample size determines the extent to which precise and confident generalisations about the findings derived from the sample can be made. A reliable and valid sample should allow for the generalisation of findings.

The sample statistics should be reliable estimates that are reflective of the parameters of the population being tested within a narrow margin of error. However, no sample statistic will be exactly the same as the population no matter how good the sample design. The criteria upon which sample size is usually determined are a function of precision and confidence.

Precision refers to how close the sample finding is to the true population characteristic. It is a function of the extent of variability in the sampling distribution of the sampling mean. The smaller the variability, the greater the probability that the sample mean will be closer to the population mean.
The variability of the sampling distribution of the sampling mean can be estimated using a single sample. This variability is called the standard error. As the sample error varies inversely with the square root of the sample size, to reduce the standard error, the sample size must be increased (Cohen 1988, Sekaran 1992, Ticehurst and Veal 2000).

Mathematically, under a normal distribution curve, 68.27 percent of observations fall within plus or minus one standard deviation of the middle of the curve; 95.45 percent of test observations fall within two standard errors, and 99.73 percent of test observations fall within three standard errors (Figure 3.7) (Sekaran 1992, Ticehurst and Veal 2000).

![Figure 3.7 Normal Distribution Curve](image)

Confidence or accuracy relates to the degree of certainty that the findings will hold true if the analyses were repeated again. For business research ninety-five (95) percent is generally the accepted level of confidence, meaning that for 95 times out of 100, the finding will be reflective of the population. Thus a randomly drawn sample has a 95 percent chance of producing a value within two standard errors of the true population value. There is a 95 percent chance of being right and a five percent chance of being wrong. This is most commonly expressed as a significance level of $p \leq 0.05$ (Sekaran 1992, Ticehurst and Veal 2000).
The larger the sample size, the greater the probability that the results will be representative of the population if the sample is randomly selected. However, for simple experimental research with tight Controls (such as with this research involving matched pairs), samples as small as 10 to 20 in number may be used (Sekaran 1992).

**Experimental Group Sample Selection**

The experimental sample group was selected by unrestricted or simple random sampling. That is, every element in the population had an equal chance of being selected. Where this type of sampling is employed, all elements of the population are considered and have an equal chance of being chosen. This method of sampling has the advantage of high generalisability of findings (Sekaran 1992).

One hundred and twelve Victorian State or public primary, secondary and special schools participated in *Quality in Schools* Group One (1997 – 1999), Group Two (1999-2000), Group Three (2000-2001) and Group Four (2001 – 2002). Table 3.3 shows the make-up of the population.

<table>
<thead>
<tr>
<th>Quality in Schools Group</th>
<th>Years of Program</th>
<th>Primary Schools</th>
<th>Secondary Schools</th>
<th>Prep to Year 12 Schools</th>
<th>Special Schools</th>
<th>Total Schools</th>
<th>No. of Schools in Study Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1998/1999</td>
<td>9</td>
<td>16</td>
<td>1</td>
<td>2</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>1999/2000</td>
<td>16</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>2000/2001</td>
<td>17</td>
<td>13</td>
<td>0</td>
<td>2</td>
<td>32</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>2001/2002</td>
<td>18</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>60</td>
<td>44</td>
<td>2</td>
<td>7</td>
<td>112</td>
<td>22</td>
</tr>
<tr>
<td>Sample Number</td>
<td></td>
<td>19</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

**Table 3.3** School Population and Sample

A sample of 22 schools was selected at random across the four groups. It was decided that testing be limited after data had been collected from 22 schools due to the amount of time required for the data collection process, the associated expense, and difficulty encountered with schools agreeing to take part.
Control Group Selection

The research was designed such that the data were collected from both an experimental and a Control group. The experimental group comprised those schools that took part in the Quality in Schools program. The Control group comprised Victorian State or public schools that did not participate in the Quality in Schools program. These schools were selected at random using pre-determined criteria; specifically, their location, size and ‘Like School Group’ demographic.

‘Like School Groups’

The ‘Like School Group’ (LSG) method of categorising schools was developed by the Victorian Department of Education to allow for differences in the composition of school student population for the purpose of assessing and comparing school performance.

During the period of the intervention, the Department categorised State schools into nine ‘Like School Groups’ based on the socio-economic composition and language background of their students. (In the last two years the methodology for categorising schools has been revised) (DEECD 2003).

Schools are assigned to a LSG depending upon the proportion of students in the school:

- for whom the main language spoken at home is not English
- that are entitled to receive an Education Maintenance Allowance (EMA) or Commonwealth Youth Allowance (CYA).

For the 2003-2005 data used in this research, the nine LSGs were calculated by the Department based on a three year moving average (2002-2004) of a school's EMA/CYA and Language Background other than English (LBOTE).

Schools in the lowest category, LSG 1, had a very low proportion of students where the language spoken at home is not English (LBOTE) and very few students were recipients of EMA/CYA. Schools in the highest category; LSG 9, had a high proportion of students with LBOTE speakers at home and a high proportion of students were recipients of EMA/CYA (DEECD 2003).
Validity and Reliability

Validity

“Validity is the extent to which the data collected truly reflect the phenomenon being studied” (Ticehurst and Veal 2000 p23).

The data collection methods used in the study need to be capable of measuring what was intended to be measured.

Two types of validity, external and internal, relate to the broader use and application of the ultimate findings of this study. Internal validity relates to the extent to which the findings of the study may be generalised. It raises questions as to whether the intervention or another environmental factor/s caused any observed relationship/s. It relates to the level of confidence in the correlations, effects or associations determined by the study (De Vaus 2001, Sekaran 1992).

In this investigation, internal validity relates to the extent to which there is confidence in a correlation existing between deployment of the Quality Improvement approach and school performance and/or improvement; should the research determine this.

“External validity refers to the extent of generalisability of the results of the study to other people, events or settings” (Sekaran 1992, p 126).

In this investigation, external validity refers to the extent to which the findings of the research can be generalised to other schools and the broader school education system.

Two methods that assist with ensuring the validity of the data relate to:

- the use of multiple sources of data or evidence. Multiple sources of data provide multiple measures of the phenomenon under investigation (Yin 1994). A variety of measures of school performance and improvement were used in the study in order to address this
• evaluating the extent to which the measures conform to theoretical expectations. This involves achieving clarity with respect to the theories and concepts underpinning the research in selecting the appropriate measures (De Vaus 1995). The measures used in the study are those routinely used by the Victorian Department of Education and therefore are considered to have credibility.

Factors Affecting Internal Validity

There are five factors that affect internal validity (Sekaran 1992).

History - Unforeseen and uncontrollable event/s that affect the relationship between the dependent and independent variables under investigation. Any of the following events could have reduced the internal validity of this study:

• a change in the senior leadership of the school resulting in abandonment of the plan to deploy the Quality Improvement approach
• a change to the membership of the team that undertook the Quality in Schools training
• the school taking part in other initiatives that impact upon performance.

Maturation - The passage of time can affect the validity of the research. In this study, this factor related specifically to the time allowed for the Quality Improvement approach to be embedded across the school. In most cases a team of five persons from the school were trained. Where the school has a large staff, considerable time is required for transfer of the learning. Also for the effects and benefits of the approach to be realised, to build confidence and gain the necessary experience to deepen and broaden the extent of the application.

Testing - The effect of the impact of testing and of the treatment being tested is best examined by building a pre and post test into the data collection process. In this case a pre-test – an initial measure of the dependent variable (i.e. the school’s absolute performance or improvement over time) was possible due to availability of the secondary data. The difference between the pre-test and post-test scores can then be attributed to the treatment (i.e. participation in the Quality in Schools program).
Selection Bias - Improper matching and selection of the experimental and Control groups can affect the validity of the study.

The use of self-reported data - Some of the difficulties experienced with this study with respect to validity of the data, related to the measurement of behaviour, and self-reported accounts of behaviour. The primary data used in the study is ‘self-reported’ with respect to the activity and behaviour of the participants in relation to the extent of deployment of the Quality Improvement approach at their site. There are obvious disadvantages associated with this methodology with respect to the assumptions made relating to the accuracy of perceptions, and honesty of the people involved. Other limitations relate to their ability to recall information, their depth of understanding of the theory and practices of Quality Improvement, and the broader school system where they were involved in only one area of the organisation and asked to generalise their observations.

Reliability

“Reliability is the extent to which the research findings would be the same if the research were to be repeated at a later date or with different sample subjects” (Ticehurst and Veal 2000, p24).

“The reliability of a measure indicates the stability and consistency with which the instrument is measuring the concept and helps to assess the ‘goodness’ of the measure” (Sekaran 1992, p 173).

The ability of a measure to stably measure the desired concepts over time despite varying testing conditions and participants is indicative of its reliability.

Testing for Validity and Reliability

Validity

A Confirmatory Factor Analysis was used to test for validity of the results achieved through the study. Validity testing is difficult when the sample size is small.

A Normed Chi Square of 2.0 was achieved when testing the ‘goodness of fit’ of the data. The score is required to be less than 3.0 to prove validity (Byrne 2001).
Reliability
Cronbach’s Alpha Analysis was used to test whether the combining of the scores reported by schools for the twelve principles provides statistically reliable results. Values of above 0.7 indicate good reliability, values of greater than 0.8 are indicative of excellent reliability of the data obtained.

The value achieved through this analysis was 0.9, indicating excellent reliability (Hair et al. 2005).

Primary Data Collection

The methodology used for collection of the primary data involved the use of a self-assessment and reporting process. This process was undertaken by one or more members of the school leadership team and/or staff. During the self-evaluation, participants were asked to select a descriptor on a set of twelve continua that they felt best reflected the current state of the school and its classrooms. Each continuum represented a number of themes describing behaviours, processes and activities reflective of increasing depth of deployment of the Quality Improvement approach. This resulted in the allocation of a numerical score representative of the depth of deployment currently being experienced by the site.

The data achieved through this process were then statistically tested for correlation with changes in the data relating to a range of school performance measures.

Twenty-two of the 112 schools that participated in groups one to four of the Victorian program took part in the self-assessment process and five Control schools. The data obtained were then used to compare the schools.

Experimental Pilot Group

A pilot was conducted with four of the 22 schools to test the instrument to be used. Improvements were made to the process and minor adjustments made to the data collection instrument based upon the initial observations made, and feedback from the pilot participants.
Establishing Contact with the Quality Schools

The Quality schools were initially approached by telephone and invited to participate. Initial contact was attempted with the school principal or, where they were unavailable, a member of the original Quality in Schools team. Where this individual was also unavailable and no suitable substitute could be found, the school was called again. After three unsuccessful attempts to connect with the principal or another member of the team, the school was classified as a non-respondent.

When interest was shown, this was followed by an email being forwarded to the school with the instrument and permission form attached to assist with their decision-making process.

Where the school agreed to take part, a convenient date and time was determined for the self-assessment session. The school was asked to allocate between one and two hours for the assessment.

Confidentially and Permissions

Individuals and schools were not identified during the process of data collection. Schools were pre-allocated a code known only to the researchers. A cover sheet was used to assign the code to the school and collect general information needed for the analysis. A consent form was issued to participants for signature before the self-assessment session commenced (Appendix 4).

Assessment Team Make-up

Each school determined the make-up of the self-assessment team, depending upon their individual preferences in undertaking the self-evaluation.

The school contact was invited to consider inviting other stakeholders to participate. (These might have included: the principal, assistant principal/s, school administrative/office personnel, teachers, and/or school council representatives.) The configurations that resulted are shown in Table 3.4.
Table 3.4  Make up of Quality School Self-assessment Teams

Five schools involved all staff in the self-assessment process, using it as a reflective exercise to build collegiality and inform future planning.

Where a team or all staff were involved in the process, a consensus as to the score for each principle was agreed. This frequently resulted in useful dialogue where differences occurred between people’s scores.

**Face-to-face Facilitation**

The self-assessment was administered through a face-to-face process by the facilitator. This method was selected to ensure that the self-assessment was completed and the data collected at a set time. Schools are generally very busy places and matters not considered urgent priorities are frequently overlooked. Research of this nature would not necessarily be given a high priority. The face-to-face process eliminated the need for participants to return a completed instrument to the researcher thus ensuring completion of the task.

The role of the facilitator was one of establishing trust, credibility and rapport with the participant, and inspiring them to respond in an honest way. The facilitator was also responsible for clarifying the purpose of the research and data collection, and for assuring participants as to the confidentiality of the information provided by them. Also, to address any questions relating to the data collection process, and to clarify any terminology the participants were unsure of. Further input by the facilitator was kept to a minimum to ensure consistency of process across the schools, and to limit any influence over the scores or answers provided by participants.
One facilitator was used to collect all of the experimental and Control school’s data, again, to provide for consistency of approach.

The instrument had a comprehensive yet concise introduction to the instrument and a step by step process explaining the instructions for completing the self-assessment. This was also provided verbally by the facilitator. The introduction also provided a summary listing of the twelve principles the assessment was based upon.

**Data Recording**

Each participant was issued with a personal copy of the instrument to record their scores and any other information. They were advised that it would be theirs to retain for future reference.

The facilitator recorded the agreed self-assessment scores for each continuum and the answers to the qualitative questions via hand written notes. A separate sheet was used for each school. Where a team participated in the self-assessment, they were asked to reach a consensus on the score to be assigned.

Observations as to engagement with the process by participants, the team dynamic and school environment and were also made by the facilitator during the time of data collection.

**Limitations Associated with the Primary Data Collection**

The disadvantages predicted with this approach in collecting the primary data included the cost associated with travelling to each individual school, and the time taken to facilitate each data collection session.

Self-assessment and reporting also assumes accuracy, consistency and honesty on the part of the participants.
Secondary Data Collection

For collection of the secondary data, each school was asked to provide a copy of their 2005 School Level Report. The report contained the required key performance indicator data.

The Control Group Sample

The selection and process of approach for the Control group sample of schools is discussed below.

Establishing Contact with the Control Schools

Step 1 – ‘Like School Group’ Matching

A listing of Like schools that matched the experimental group was compiled using the Victorian Department of Education’s on-line Like School Group listings of all Victorian schools (VIC DET 2003).

Step 2 – School Type

A second matching criterion was applied at this stage to further match the schools as either primary, secondary or special schools.

Step 3 – Size

The listing of Like schools that matched the experimental group compiled in step one was then rationalised using the Department’s on-line school search facility. The facility provides information relating to the size (number of student enrolments) of the school (VIC DEECD 2007). Those schools that did not match the experimental schools in terms of size were removed from the listing.
Step 4 – Location

The Department’s on-line school search facility also provides information relating to the location of the school (VIC DEECD 2007). The locations of the Control schools were as closely matched as possible to the experimental school with respect to geography and Departmental region.

Step 5 – Contacting the School

The Department’s on-line school search facility also provided principal’s name and contact details for each school. Schools were initially approached by telephone and invited to participate. Contact was attempted with the school principal. After three unsuccessful attempts to connect with a school, it was classified as a non-respondent.

When interest was shown, this was followed by an email with the instrument and permission form attached to assist with the decision-making process of the school.

Where the school agreed to take part, a convenient date and time was determined for the self-assessment session. The school was asked to allocate between one and two hours for the assessment.

Many schools declined to take part at the point when initial contact was made. This resulted in support being sought from a number of Departmental regional officers. The regional officers gave permission for their name to be used in contacting the principal to encourage the school to agree to participate. This proved to be a more effective method in persuading some schools to take part.

Difficulty experienced with gaining school agreement to participate, only five Control schools completed the self-assessment. A further 16 schools agreed to provide only secondary data. Significant time and cost was invested in approaching schools to participate, without success, during this phase of the study. Overall, data was only obtained from 21 (rather than 22) Control schools.
Control Group Data Collection

Five Control schools completed the self-assessment. The self-assessment data collection process followed was identical to that used for the experimental school group. However, in all five cases the self-assessment was completed by only the principal rather than a group, or all members of staff from the school, as with the experimental group.

A further 16 schools were asked only to provide secondary data. This was decided after difficulty was experienced (a low success rate) in finding schools that would agree to take part. As discussed previously, the secondary data used in the study were readily available to the schools. It therefore required minimum effort on the part of the school. This helped with convincing some schools to take part. A few other schools were also encouraged to respond with assurance as to the confidentiality of the information they were asked to provide. Naturally, schools that might not be performing well are reluctant to make their data public.

Data Analysis

The relationships existing between the data achieved for the Quality schools and the Control groups of schools were investigated using a range of statistical analyses.

“Statistics are used to make rational decisions under conditions of uncertainty. Inferences are made about populations based on data from samples that contain incomplete information” (Tabachnick and Fidell 2007 p33).

Both inferential and descriptive statistics were obtained for the purpose of describing and making inferences about the data. Descriptive Statistical Analysis is used to study and describe a sample from a population in terms of selected variables or combinations of variables. Inferential Statistical Analysis uses a sample to test specific hypotheses by measuring differences. Where reliable differences are found, then general inferences about the broader population are made (Tabachnick and Fidell 2007).

The methods used are described in this section with reference to the specific research question and hypothesis they were used to test.
Statistical Data Analysis: Testing Research Questions and Hypotheses 1, 2 & 3

Data Collation

A spreadsheet was created listing the experimental schools together with their matched (paired) Control schools, and summarising the primary and secondary data collected (Appendix 5). The purpose of the spreadsheet was to collate the data necessary for the analyses to be performed.

The self-assessment scores relating to the primary data were entered for each school for each of the thirteen areas tested. The secondary data relating to the seven key performance indicators were extracted from the School Level Report provided by each school, and entered onto the spreadsheet. Like School Group means were also documented.

Testing Research Question/Hypothesis 1: Deployment of Quality Improvement Quality Schools vs Control Schools

Research Question

“Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than the Control schools that did not participate in the program?”

Hypothesis

“The schools that participated in the Quality in Schools program have deployed the Quality Improvement approach to a greater degree than the Control schools that did not participate in the program.”

Comparing Quality Improvement Deployment in Quality and Control Schools

The purpose of this analysis was to determine whether the Quality and Control schools differed with respect to the depth of deployment of the Quality Improvement approach.
A t-Test analysis was used for this investigation. A t-Test analysis is performed to examine whether two groups are different to each other with respect to a specific variable. It takes into consideration the means and the standard deviations of the two groups with respect to the variable, and examines whether the numerical difference between the means is significantly different. \( p \)-values of below 0.05 are used to identify significant differences between means (Sekaran 1992, Ticehurst and Veal 2001).

In this case, sample sizes differed (22 Quality schools and five Control schools), so the depth of deployment of the Quality Improvement approach using the self-assessment scores was compared using a Mann-Whitney Rank Test as well as an Independent Samples t-Test. This is because an Independent Samples t-Test is sometimes unreliable when sample sizes differ greatly (Sekaran 1992, Ticehurst and Veal 2001).

**Testing Research Question/Hypothesis 2: Deployment of Quality Improvement Impact on School Performance**

**Research Question**

“How does adopting the Quality Improvement approach impact upon school performance?”

**Hypothesis**

“The greater the depth of application of the Quality Improvement approach by a school; the greater the school’s performance measured in terms of:

- student achievement performance (at one point in time - 2005)
- staff satisfaction performance (at one point in time - 2005)
- parent satisfaction performance (at one point in time - 2005)”.
Impact of Depth of Deployment of Quality Improvement on Quality and Control School Performance

A Spearman’s Correlation Analysis was performed to test the relationship between the depth of deployment of the Quality Improvement approach measured by the self-assessment scores, and the performance of the Quality and Control schools. This was used to investigate the relationship between the variables to ascertain whether a positive correlation exists between them.

Spearman’s methodology tests the direction and strength of the relationship between two variables, making no assumption of normality. The correlation that exists between the two variables is measured by means of a correlation coefficient (RS) (Encyclopædia Britannica 2008, Lehmann and D’Abrera 1998, Ticehurst and Veal 2000). The following interpretation applies:

- Where there is no relationship between the variables RS will be zero
- Where there is a perfect positive correlation between the variables (that is as one increases, so does the other) RS will be +1.0
- Where there is a perfect negative correlation between the variables (that is as one increases, the other decreases) RS will be -1.0
- Where there is some positive correlation between the variables RS will lie between 0 and +1.0
- There is some negative correlation between the variables RS will lie between 0 and -1.0.

The greater the positive or negative correlation between the variables, the closer RS is to +1.0 or -1.0 respectively. A correlation of between 0.1 and 0.2 is regarded as very weak, between 0.3 and 0.4 is weak, 0.5 and 0.7 is moderate, and 0.8 and 0.9 is strong. A p-value is also provided for each correlation coefficient, with values below 0.05 regarded as significant (Ticehurst and Veal 2000).

With the Spearman methodology, the measures are non-parametric in that there are no assumptions about the distribution of the data.
Impact of Depth of Deployment of Quality Improvement on Student Learning in Primary Schools

A further correlational analysis was used to test the relationship between deployment of the Quality Improvement approach and student learning performance at one point in time, using extended data available for primary school students in the areas of reading, writing and number for the year 2005.

Year preparatory to six data were used from 19 primary schools for this analysis.

Testing Research Question/Hypothesis 3: Quality in Schools Participation Impact on School Improvement

Research Question

“Do the schools that participated in the Quality in Schools program show greater improvement than schools that did not participate in the program?”

Hypothesis

“The rate of school improvement of the schools that participated in the Quality in Schools program is greater than for schools that did not participate in the program.

- Improvement in student achievement over time (2003-2005)
- Improvement in staff satisfaction over time (2003-2005)
- Improvement in parent satisfaction over time (2003-2005).”

Comparing the Improvement of Quality Schools with Control Schools

This analysis was performed to compare the improvement achieved by Quality and Control schools over the three year period 2003 to 2005.

A Multivariate Analysis of Variance (MANOVA) was used.

The MANOVA is an analysis of variance (ANOVA) method. It applies where there is at least one independent variable and multiple dependent variables. It is generally used to investigate the relationships that exist where the dependent variables cannot be easily combined.
The method identifies whether changes in the independent variables demonstrate a significant relationship to the dependent variables. It also identifies any interactions among the independent variables and associations among dependent variables.

“MANOVA tests whether mean differences among groups on a combination of dependent variables are likely to have occurred by chance” (Tabachnick and Fidell 2007 p243).

The MANOVA method of statistical analysis has several advantages over ANOVA. By measuring several dependent variables in a single experiment, there is a better chance of discovering which factor is important – i.e. what it is that changes as a result of different treatments and interactions. It can also reveal differences not discovered by ANOVA tests.

However, the MANOVA method is more complicated in design than the ANOVA. Ambiguity can arise as to which independent variable affects each dependent variable. Also, one degree of freedom is lost for each dependent variable added. However this may be offset by the decreased error associated with the method. The single MANOVA test has a probability for Type 1 error equal to five (5) percent. This means that there is a five percent chance of detecting a difference where no such difference exists. However, where separate ANOVA tests are conducted as an alternative method. However, each of these tests has a five (5) percent chance of error, producing a higher overall chance of error.

The MANOVA method was used to investigate the relationship existing between the matched Quality and Control schools with respect to the improvement in their performance over the years 2003 to 2005 in student achievement, parent and staff opinion.

In this case a Two-Factor-Within-Subjects (or Repeated Measures) MANOVA was considered appropriate because performance measures were considered for three consecutive years from each school, and because the Quality and Control schools were matched in terms of their Like School Group. The first factor was therefore the year, and the second factor was the type of school (i.e. Quality or Control).
Comparing the Improvement of Quality to Like Schools (State Averages)
The improvement achieved by the Quality schools was compared to the average performance of all other schools across the State of Victoria in the Quality school’s Like School Group. A One-Factor-Within-Subjects (or Repeated Measures) MANOVA was used, with year defined as the single factor.

Qualitative Data Analysis Testing
Research Question and Hypothesis 4: The Challenges of School Improvement

Research Question
“What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the Quality in Schools program as for schools that did not?”

Hypothesis
“The challenges to school improvement experienced by schools that participated in the Quality in Schools program are different to those experienced by Control schools that did not participate in the program.”

Identifying the Challenges of School Improvement: Qualitative Perception Analysis
Each participant undertaking the self-assessment was asked to provide answers to three open-ended qualitative questions. The questions were designed to gather perception data relating to the challenges experienced in effecting improvement in the school. The questions were:

- “What do you consider to be three key characteristics of an excellent school?
- What are three things that drive improvement in your school?
- What are three things that prevent improvement in your school?”

The data were collected in written form from each of the participants where the group size was large. The facilitator recorded the oral answers provided by smaller participant groups.
The qualitative data for both the Quality and Control groups of schools were extracted and entered onto a spreadsheet (Appendix 5).

Responses to the questions were analysed and themes identified as they emerged from the data. The answers provided by the respondents were generally concise; one or two words or short phrases, rather than an extensive narrative, which provided for easier recording and the theming of ideas.

A tally was generated of the number of times each theme recurred in the responses given. These themes and the corresponding tallies were graphed (as three Column Charts) so that the most frequently recurring themes could be identified, compared and contrasted.

**The Impact of Various Challenges on the Deployment of Quality Improvement**

Additional information was collected (orally during the session) from each participating school to assess the impact of specific challenges on the deployment of the *Quality Improvement* approach, namely:

- whether or not the incumbent of the role of senior leader of the school (i.e. the school principal) was the same person who undertook the professional development
- the size of the school (measured in terms of the number of students enrolled)
- the number of years the approach had been deployed (the time period between completion of the training and the final year of data collection - 2005)
- the number of original members of the team that undertook the professional development remaining at the school.

These challenges have been associated with the stalling or failure of changes initiatives in organisations.

The data for both the Quality and Control groups of schools were extracted and entered onto a spreadsheet (Appendix 5f) and the following analyses undertaken (Table 3.5).
## Conclusion

This chapter described the research design and methodology adopted to answer the research questions and test the research hypotheses.

It described the development of the study construct. The design of the data collection instrument, process and analysis using quantitative and qualitative data, derived from primary and secondary sources, were also discussed.

The method used to collect the primary data involved the use of a self-evaluation/reporting instrument. The instrument required the participant to select a descriptor that best described the current practices, behaviours and activities of the school reflective of the various levels of deployment of the Quality Improvement approach. Each descriptor carried a numerical weighting so that a score resulted from the process.

The self-assessment was completed by one or more individuals from each school in a session attended by a facilitator. The facilitator outlined the process and recorded the data generated by the group or individual.

Observations were also made at this time as to the use of the instrument and engagement with the process by participants.
Qualitative data were collected through the use of three open-ended questions relating to participant perceptions of the challenges to school improvement. Factual data relating to school size, team members, leadership and the program were also collected to assess the impact of theses challenges on deployment of the Quality Improvement approach.

Secondary data were obtained from each of the schools relating to key school performance indicators. The data used were extracted from annual reports (School Level Reports) compiled for each school by the Victorian Department of Education. The indicators used related to student learning outcomes, parent and staff opinion for the three years 2003, 2004 and 2005.

Data were collected from 22 of a possible 112 schools that participated in the Victorian Quality in Schools program between 1997 and 2002. Data were also collected from a matched set of 21 Control schools. The matching process made use of a pre-existing Victorian Department of Education ‘Like’ school categorisation method, based on student socioeconomic and language-based criteria.

A range of statistical analyses and qualitative methods were applied to the data collected to test the relationships existing between the Quality, Control and Like schools with respect to deployment of the Quality Improvement approach, school performance and improvement, and the challenges to school improvement reported by schools.

The next chapter presents and discusses the findings of the data analysis.
This page intentionally blank.
Chapter Four

Presentation and Analysis of Findings

Introduction

The purpose of this chapter is to present the findings of the study. Also to analyse and discuss the data obtained through the course of deployment of the research methodology.

The chapter is structured to present the findings and analyses as they address each of the research questions and hypotheses.

Terminology

Quality Schools and Control Schools

The schools that took part in the Quality in Schools program are referred to as ‘Quality’ schools and the schools used for comparative purposes that did not take part in the program are referred to as ‘Control’ schools.

Depth of Deployment

The term ‘depth of deployment’ refers to the degree to which the schools have applied the Quality Improvement philosophy. This is a critical element of the methodology, introduced in this chapter. The depth of deployment is measured by a self-assessment score.
**Research Question/Hypothesis 1:**

**Deployment of Quality Improvement Quality Schools versus Control Schools**

**Research Question**

“Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than schools that did not participate in the program?”

**Hypothesis**

The hypothesis is that the schools that participated in the Quality in Schools program have deployed the Quality Improvement approach to a greater degree than the Control schools that did not participate in the program.

**Measures**

The measure of the extent of deployment of the Quality Improvement approach is the school self-assessment score.

**Comparing Quality Improvement Deployment in Quality and Control Schools**

**Methodology**

Two methodologies were used in this analysis. For the first analysis, an Independent Samples t-Test, was performed to examine whether the Quality and Control schools differed with respect to the depth of deployment of the Quality Improvement approach. The t-Test takes into consideration the means and the standard deviations of the two groups with respect to the deployment variable, and examines whether the numerical difference between the means is statistically significantly different. The test assumes normally distributed data for each group.
The Mann-Whitney Rank Test was used as the second method of analysis. The Mann-Whitney Rank Test assesses whether two samples of observations come from the same distribution.

The null hypothesis is that the two samples are drawn from a single population, and therefore that their probability distributions are equal. It requires the two samples to be independent, and observations to be metric measurements. No assumption of normality is required.

The two tests are used together to validate a comparison of the means of the data for the two groups of schools. That is, are the means produced by the Quality schools greater than those for the Control schools? Agreement between the results for these two tests provides confirmation of any conclusion reached.

There were 12 parts to the self-assessment questionnaire – reflecting the principles of Quality Improvement. This analysis compared the Quality and Control schools in relation to each of these individual elements, as well as the reported total score of the self-assessment.

**Findings**

The results of the analyses are shown in Table 4.1.

*p*-values of less than five percent (i.e. \( p = 0.05 \)) are considered statistically significant (bolded and asterisked in Table 4.1).

Self-assessment results were available for only five Control schools. Therefore the matching of results was not possible for a comparison of responses using the data obtained from all twenty-two Quality schools. In view of the relatively small number of Control schools the results must be interpreted cautiously.

The results show (Findings 1-5):
### Table 4.1 Results of Analysis: Comparing Quality Improvement Deployment: Self-assessment Scores Quality and Control Schools

<table>
<thead>
<tr>
<th>Principle/Item</th>
<th>Mean Values</th>
<th>Independent Sample t-Test</th>
<th>Mann-Whitney Rank Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quality schools (N=22)</td>
<td>Control schools (N=6)</td>
<td>t (26)</td>
</tr>
<tr>
<td>Principle 1 Purpose &amp; Vision</td>
<td>3.59</td>
<td>3.00</td>
<td>1.17</td>
</tr>
<tr>
<td>Principle 2 Planning</td>
<td>4.00</td>
<td>3.00</td>
<td>2.48</td>
</tr>
<tr>
<td>Principle 3 Clients</td>
<td>4.00</td>
<td>3.17</td>
<td>1.93</td>
</tr>
<tr>
<td>Principle 4 Processes</td>
<td>3.14</td>
<td>2.50</td>
<td>1.33</td>
</tr>
<tr>
<td>Principle 5 Systems</td>
<td>3.68</td>
<td>3.17</td>
<td>1.23</td>
</tr>
<tr>
<td>Principle 6 Data</td>
<td>3.36</td>
<td>2.33</td>
<td>2.41</td>
</tr>
<tr>
<td>Principle 7 Variation</td>
<td>3.55</td>
<td>2.00</td>
<td>3.88</td>
</tr>
<tr>
<td>Principle 8 People</td>
<td>4.32</td>
<td>2.67</td>
<td>4.87</td>
</tr>
<tr>
<td>Principle 9 Learning</td>
<td>3.41</td>
<td>2.50</td>
<td>1.88</td>
</tr>
<tr>
<td>Principle 10/11 Stakeholders</td>
<td>3.82</td>
<td>2.17</td>
<td>4.56</td>
</tr>
<tr>
<td>Principle 12 Leadership</td>
<td>3.77</td>
<td>2.50</td>
<td>2.60</td>
</tr>
<tr>
<td>Item 13 Change</td>
<td>4.36</td>
<td>3.17</td>
<td>2.51</td>
</tr>
<tr>
<td>Total Score</td>
<td>45</td>
<td>32</td>
<td>2.81</td>
</tr>
</tbody>
</table>

Figure 4.1 Column Chart - Deployment of Quality Improvement: Average Total Self-assessment Scores Quality and Control Schools
Finding 1
Overall the Quality schools showed statistically significant greater deployment of the Quality Improvement approach than the Control schools (Table 4.1 and Figure 4.1).

Finding 2
The responses of the Quality schools demonstrated statistical significance (i.e. $p < 0.05$) with respect to being higher than those of the Control schools in the following seven areas of deployment: Principle 2 Planning, Principle 6 Data, Principle 7 Variation, Principle 8 People, Principles 10 and 11 Stakeholders and Principle 12 Leadership, Item 13 Change (Table 4.1 bolded and asterisked).

Finding 3
The means of the self-assessment scores for each of the 12 principles exceeded that of the Control schools in all cases (Table 4.1 and Figure 4.2).

Figure 4.2  Column Chart - Deployment of Quality Improvement: Principle Self-assessment Scores Quality and Control Schools
Finding 4
The total self-assessment scores for 19 of the 22 Quality schools exceeded those of the five Control schools (see Figure 4.3).

![Figure 4.3](image1)

Figure 4.3 Column Chart - Deployment of Quality Improvement: Comparison of Quality and Control Schools Total Self-assessment Scores
(Legend: Cn = Control School number n (arrow), Qn = Quality School number n)

Finding 5
Figures 4.4 to 4.8 compare the performance of the Quality and Control schools with respect to deployment of the twelve areas studied.

In Figure 4.4 each coloured band in the Area Chart represents a different Quality school and is reflective of the school’s performance across the 12 principles. The data shows a consistency of deployment by all Quality schools across the 12 principles. This is confirmed in the Error Bar Plots in Figure 4.5.
Figure 4.4 Area Chart - Depth of Deployment of Quality Improvement Principles by Quality Schools

Figure 4.5 Error Bar Plot - Depth of Deployment of Quality Improvement Principles by Quality Schools; Means with 95% Confidence Intervals
In Figure 4.7 each coloured band in the Area Chart represents a different Control school and is reflective of the school’s performance across the 12 principles. The data shows consistency of deployment by the Control schools across the 12 principles. The Error Bar Plot in Figure 4.8 confirms this finding.

As the Error Bar Plots in Figures 4.5 and 4.7 illustrate, the Control schools rated themselves lower than the Quality schools in all 12 areas.

Figure 4.8 is a Column Chart showing the differences in means reported by the Quality and Control schools. The Quality schools showed considerably greater deployment in the seven areas of: Planning, Data, Variation, People, Stakeholders, Leadership and Change.
Figure 4.7  Errors Bar Plot - Depth of Deployment of Quality Improvement Principles by Control Schools; Means with 95% Confidence Intervals

Figure 4.8  Differences in Mean Principle Self-assessment Scores of Quality and Control Schools
Summary

In summary:

- the overall depth of deployment of the Quality Improvement principles is higher for the 22 Quality schools than for the five Control schools.
- for the 12 elements of deployment tested the Control schools were statistically significantly weaker than the Quality schools in the seven areas of Planning, Data, Variation, People, Stakeholders, Leadership and Change.

Research Question/Hypothesis 2: Deployment of Quality Improvement Impact upon School Performance

Research Question

“How does adopting the Quality Improvement approach impact upon school performance?”

Hypothesis

The hypothesis is that: the greater the depth of application of the Quality Improvement approach by a school; the greater the school’s performance measured in terms of:

- student achievement performance (at one point in time - 2005)
- staff satisfaction performance (at one point in time - 2005)
- parent satisfaction performance (at one point in time - 2005).

Measures

The measures used in the analyses were:

- the total scores reported through the self-assessment process – to measure the extent of deployment of the Quality Improvement approach, and;
- secondary data relating to the selected school key performance indicators (discussed and summarised in Table 3.1 in Chapter three) to assess school performance in 2005. The year 2005 was selected because it represented the most recent set of consistently comparable data available.
Impact of Depth of Deployment of Quality Improvement on School Performance (Quality and Control Schools)

Methodology

A Spearman’s Correlation Analysis was used to examine the relationship between the depth of deployment of the Quality Improvement approach in 2008 and school performance with respect to the seven selected key performance indicators for 2005.

Year 6 learning outcome data was used for primary schools, and Year 10 data for secondary colleges.

The data used for this analysis were for Quality schools only.

Findings

Table 4.3 summarises the findings of the correlation analysis.

In interpreting the findings; the greater the positive or negative correlation between the variables, the closer the correlation coefficient (RS) is to +1.0 or -1.0 respectively. A correlation of between 0.1 and 0.2 is regarded as very weak, between 0.3 and 0.4 is weak, 0.5 and 0.7 is moderate, and 0.8 and 0.9 is strong.

The correlations considered significant at the five percent level are bolded and asterisked.

The results show (Findings 1-4):

Finding 1

The analysis revealed that there is a significant correlation between the total self-assessment score reported by the Quality Schools and KPI 7 (Staff Satisfaction) (RS = 0.582). A Scatter Plot (Figure 4.10) illustrates this.

This suggests that the greater the depth of deployment of the Quality Improvement approach, the greater the level of staff satisfaction with their experience of the workplace. Employee morale is higher in a school that shows greater application or evidence of deployment of the Quality Improvement approach.
Table 4.3 Correlation Analysis Results: Deployment of Quality Improvement: Total Self-assessment Scores (2008) and KPI Performance (2005)

<table>
<thead>
<tr>
<th>Spearman’s RS</th>
<th>Total SA Score</th>
<th>KPI 1 Reading</th>
<th>KPI 2 Writing</th>
<th>KPI 3 Number</th>
<th>KPI 4 AIM Read</th>
<th>KPI 5 AIM Maths</th>
<th>KPI 6 Parent Satis.</th>
<th>KPI 7 Staff Satis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total SA Score</td>
<td>1.000</td>
<td>-.140</td>
<td>-.100</td>
<td>-.022</td>
<td>-.153</td>
<td>-.115</td>
<td>.244</td>
<td>.582*</td>
</tr>
<tr>
<td>KPI 1 Reading</td>
<td>-.140</td>
<td>1.000</td>
<td>.946*</td>
<td>.914*</td>
<td>.634*</td>
<td>.472*</td>
<td>-.330</td>
<td>-.137</td>
</tr>
<tr>
<td>KPI 2 Writing</td>
<td>-.100</td>
<td>.946*</td>
<td>1.000</td>
<td>.941*</td>
<td>.701*</td>
<td>.582*</td>
<td>-.219</td>
<td>-.007</td>
</tr>
<tr>
<td>KPI 3 Number</td>
<td>-.022</td>
<td>.914*</td>
<td>.941*</td>
<td>1.000</td>
<td>.616*</td>
<td>.487</td>
<td>-.334</td>
<td>.052</td>
</tr>
<tr>
<td>KPI 4 AIM Reading</td>
<td>-.153</td>
<td>.634*</td>
<td>.701*</td>
<td>.616</td>
<td>1.000</td>
<td>.945*</td>
<td>-.282</td>
<td>-.183</td>
</tr>
<tr>
<td>KPI 5 AIM Maths</td>
<td>-.115</td>
<td>.472</td>
<td>.582*</td>
<td>.487</td>
<td>.945*</td>
<td>1.000</td>
<td>-.166</td>
<td>-.122</td>
</tr>
<tr>
<td>KPI 6 Parent Satisfaction</td>
<td>.244</td>
<td>-.330</td>
<td>-.219</td>
<td>-.334</td>
<td>-.282</td>
<td>-.166</td>
<td>1.000</td>
<td>.352</td>
</tr>
<tr>
<td>KPI 7 Staff Satisfaction</td>
<td>.582*</td>
<td>-.137</td>
<td>-.007</td>
<td>.052</td>
<td>-.183</td>
<td>-.122</td>
<td>.352</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Finding 2

The analysis failed to show further evidence of any correlation existing for the other key performance indicators relating to student learning outcomes and parent satisfaction, and total self-assessment score (depth of deployment of the Quality Improvement approach).

Finding 3

Significant positive correlations were observed between the key performance measures for learning outcomes as follows:

- KPI 1 (Reading) and KPI 2 (Writing). This confirms the expectation that schools displaying greater performance in reading also show a greater performance in writing.

- KPI 1 (Reading) and KPI 3 (Number). This confirms the expectation that schools displaying greater performance in reading also show greater performance in mathematics or number.
Figure 4.10 Scatter Plot - Deployment of Quality Improvement:
Total Self-assessment Score (2008) and Performance Staff Satisfaction (2005)

- KPI 1 (Reading) and KPI 4 (AIM Reading). This confirms the expectation that schools performing well against the curriculum for reading (as assessed by teachers) also perform well on the state-wide standardised test for reading.

- KPI 1 (Reading) and KPI 5 (AIM Mathematics). This shows that schools performing well against the curriculum for reading (as assessed by teachers) also perform well in the state-wide standardised test for mathematics.

- KPI 2 (Writing) and KPI 3 (Number). This confirms the expectation that schools displaying greater performance in writing also show greater performance in mathematics or number.
• KPI 2 (Writing) and KPI 4 (AIM Reading). This confirms the expectation that schools performing well against the curriculum (as assessed by teachers) for writing also perform well on the state-wide standardised test for reading.

• KPI 2 (Writing) and KPI 5 (AIM Mathematics). This shows that schools performing well against the curriculum (as assessed by teachers) for writing also perform well on the state-wide standardised test for mathematics or number.

• KPI 3 (Number) and KPI 4 (AIM Reading). This shows that schools performing well against the curriculum for number (as assessed by teachers) also perform well on the state-wide standardised test for reading.

• KPI 3 (Number) and KPI 5 (AIM Mathematics). This confirms the expectation that schools performing well against the curriculum (as assessed by teachers) for mathematics or number also perform well on the state-wide standardised test for mathematics or number.

• KPI 4 (AIM Reading) and KPI 5 (AIM Mathematics). This showed that schools that perform well on the state-wide standardised test for reading also perform well on the state-wide standardised test for mathematics or number.

Finding 4

With respect to testing correlations between the depth of deployment of the Quality Improvement approach and key performance indicators one to seven; a power analysis shows that a total sample size of 46 schools would be needed to detect correlations as small as 0.40, with a sample size of 28 schools to detect correlations of 0.50.

The difficulties experienced with obtaining a larger sample size for the purpose of conducting this extended testing are discussed later in this chapter.
Impact of Depth of Deployment of Quality Improvement on Student Learning in Primary Schools

Methodology

A Spearman’s Correlation Analysis was performed to test the relationship between the depth of deployment of the Quality Improvement approach in 2008, and primary school student learning performance in the areas of reading, writing and mathematics for the year 2005.

AIM Testing and parent and staff satisfaction data were not included as AIM data are only available for years 3 and 5, and the annual opinion data were already considered in the other analyses performed.

The data from 19 primary schools were used and examined the relationship in deployment and performance across each of the student year levels (preparatory to Year 6). Only Quality primary schools were included in this analysis. A similar analysis was not performed for secondary colleges as only three sets of school data were obtained.

Findings

Table 4.4 shows the results obtained through this analysis.

The results show (Findings 1 and 2):

Finding 1
There were no significant correlations detected between the key performance indicators and total self-assessment scores for any of the year levels. A power analysis showed that the sample size was too small to detect correlations of 0.5 or lower.

Finding 2
A Sign Test showed that only four of the 19 correlations were negative (bolded and asterisked in Table 4.4), with the majority of the correlations achieved being positive (one would normally expect an equal split).
This indicates that overall there is a significant but weak correlation between total self-assessment score and actual performance in primary schools (i.e. \( p = 0.0007 \)).

There is therefore evidence to suggest that the greater the depth of deployment of the *Quality Improvement* approach, the greater the impact on school performance in the areas of primary student learning – *Reading, Writing* and *Number*.

<table>
<thead>
<tr>
<th>Correlation Coefficient</th>
<th>Key Performance Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KPI 1 Reading</td>
</tr>
<tr>
<td><strong>Student Year Level</strong></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>.123</td>
</tr>
<tr>
<td>1</td>
<td>-.066*</td>
</tr>
<tr>
<td>2</td>
<td>.188</td>
</tr>
<tr>
<td>3</td>
<td>.242</td>
</tr>
<tr>
<td>4</td>
<td>.218</td>
</tr>
<tr>
<td>5</td>
<td>-.009*</td>
</tr>
<tr>
<td>6</td>
<td>.171</td>
</tr>
</tbody>
</table>

**Table 4.4 Correlational Analysis Results: Deployment of Quality Improvement Total Self-assessment Scores (2008) and Primary School Student Learning Outcome Indicators (2005)**

**Summary**

In summary:

- the findings show that the 2008 deployment levels of the *Quality Improvement* approach are positively correlated with *Staff Satisfaction* levels for 2005 for all Quality and Control schools

- the findings show that the 2008 deployment levels of the *Quality Improvement* approach are positively correlated with key performance indicators for *Reading, Writing, and Number* in 2005 for primary schools.
• there was no correlation detected between the 2008 deployment levels of the Quality Improvement approach and Parent Satisfaction.

• one might expect that the data would have shown a weakening in the correlations between depth of deployment (data collected 2008), and school performance (for 2005) (a gap of over three years). The fact that positive correlations were obtained suggests that the Quality in Schools program has been sustained in these organisations over time.

**Research Question/Hypothesis 3: Quality in Schools Participation: Impact on School Improvement**

**Research Question**

“Do the schools that participated in the Quality in Schools program show greater improvement than schools that did not participate in the program?”

**Hypothesis**

The rate of school improvement of the schools that participated in the Quality in Schools program is greater than schools that did not participate in the program measured in terms of:

• Improvement in student achievement over time (2003-2005)

• Improvement in staff satisfaction over time (2003-2005)

• Improvement in parent satisfaction over time (2003-2005).

**Measures**

The measures used in the analyses were secondary data relating to the seven selected school key performance indicators (discussed and summarised in Table 3.1 in chapter three) to assess school improvement over the three year period 2003 to 2005.
Methodology

The analyses associated with this question examined the relationship between the Quality schools and other schools with respect to school improvement.

The following analyses were used:

a) A Two-Factor-Within-Subjects MANOVA for the comparison of matched Quality and Control schools

b) A One-Factor-Within-Subjects MANOVA for the comparison of Quality schools with State means for Like School Groups.

The two analyses were performed to allow for:

- a comparison of Quality and matched Control schools (matching was based on Like School Group, size and location)
- a more comprehensive comparison of the Quality schools with all other schools within their Like School Group across the State of Victoria. (Like Schools are grouped on demographic criteria relating to the socioeconomic status and where English is a second language of students – see chapter three).
- the confirmation of findings. There were advantages and disadvantages associated with both analyses. A greater number of schools were represented in the Like Schools sample. However, the 21 Control schools had a higher degree of ‘likeness’ or similarity to the Quality schools, due to a greater number of criteria being applied to the process of matching the schools.

Comparing the Improvement of Quality Schools with Control Schools

Methodology

A Two-Factor-Within-Subjects MANOVA analysis was used to compare the improvement achieved over the three years 2003 to 2005 for the matched Quality and Control schools.

Effect Size is a measure of the strength of the relationship between two variables.
The benchmarks suggested by Cohen (1988) for interpreting the size of the Effect statistic are as follows:

- an Effect Size of 0.2 to 0.3 is considered small
- an Effect Size of 0.5 is considered medium
- an Effect Size of 0.8 to 1.0 is considered large.

Findings

Table 4.5 displays the results achieved through this analysis.

<table>
<thead>
<tr>
<th>Key Performance Indicator</th>
<th>F(2,40)</th>
<th>p-value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPI 1 Reading</td>
<td>1.637</td>
<td>.207</td>
<td>.076*</td>
</tr>
<tr>
<td>KPI 2 Writing</td>
<td>1.860</td>
<td>.169</td>
<td>.085*</td>
</tr>
<tr>
<td>KPI 3 Number</td>
<td>.134</td>
<td>.875</td>
<td>.007</td>
</tr>
<tr>
<td>KPI 4 AIM Reading</td>
<td>.899</td>
<td>.415</td>
<td>.043</td>
</tr>
<tr>
<td>KPI 5 AIM Number</td>
<td>1.165</td>
<td>.322</td>
<td>.055</td>
</tr>
<tr>
<td>KPI 6 Parent Satisfaction</td>
<td>.527</td>
<td>.595</td>
<td>.026</td>
</tr>
<tr>
<td>KPI 7 Staff Satisfaction</td>
<td>.101</td>
<td>.904</td>
<td>.005</td>
</tr>
<tr>
<td>Overall F(2,19)</td>
<td>2.003</td>
<td>.162</td>
<td>.174</td>
</tr>
</tbody>
</table>

Table 4.5 MANOVA Analysis Results: Quality and Control School Improvement (2003 to 2005)

Where a $p$-value of less than 0.05 is detected, the changes in the key performance indicator behaviour from 2003 to 2005 are considered statistically significant between the Quality and Control schools.

The results show (Findings 1-4):

Finding 1

There were no statistically significant differences between the Quality and Control schools with respect to improvement over the years 2003 to 2005.

A Power Analysis revealed that the sample size would need to be doubled or even tripled for both the Quality and Control schools in order to find a large Effect Size.
Finding 2

When a comparison of the mean values on which the results are based was considered (Table 4.6 and Figures 4.9 to 4.15), the data show that:

- for all of the parameters tested the Quality schools started at a lower performance base than the Control schools in 2003

- the performance of the Quality schools has improved and ‘caught up to’ the performance of the Control schools in the subsequent years of 2004 and 2005. This is evident for all areas with the exception of Staff Satisfaction (Figure 4.15) where the results for both sets of schools worsened over the period 2003-2005.

<table>
<thead>
<tr>
<th>KPI</th>
<th>Quality Schools (N=22)</th>
<th>Control Schools (N=21)</th>
<th>Maximum Possible Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPI 1 Reading</td>
<td>4.00 4.04 4.07</td>
<td>4.07 4.07 4.07</td>
<td>5</td>
</tr>
<tr>
<td>KPI 2 Writing</td>
<td>3.96 3.98 4.03</td>
<td>4.05 4.04 4.04</td>
<td>5</td>
</tr>
<tr>
<td>KPI 3 Number</td>
<td>4.03 4.04 4.09</td>
<td>4.06 4.06 4.09</td>
<td>5</td>
</tr>
<tr>
<td>KPI 4 AIM Reading</td>
<td>3.20 3.37 3.31</td>
<td>3.34 3.39 3.36</td>
<td>5</td>
</tr>
<tr>
<td>KPI 5 AIM Number</td>
<td>3.20 3.28 3.39</td>
<td>3.36 3.45 3.43</td>
<td>5</td>
</tr>
<tr>
<td>KPI 6 Parent Satisfaction</td>
<td>5.15 5.20 5.21</td>
<td>5.27 5.28 5.25</td>
<td>6</td>
</tr>
<tr>
<td>KPI 7 Staff Satisfaction</td>
<td>73.06 68.80 69.61</td>
<td>76.40 71.17 72.91</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.6 Mean Value Comparison: Key Performance Indicators for Quality and Control Schools (2003-2005)

KPI 1 - Reading Improvement

The Interaction Chart in Figure 4.11 compares the improvement achieved over the years 2003 and 2005 for the Quality and Control schools for reading.
Although the data are not considered statistically significant for this sample size, they indicate the following trends:

- no improvement in the reading data for the Control schools over the three year period
- sustained improvement over the years 2003 to 2005 for the Quality schools
- the Quality schools start from a lower level of performance and ‘catch up’ to the Control schools within the three year period.

**KPI 2 – Writing Improvement**

The Interaction Chart in Figure 4.12 compares the improvement achieved over the years 2003 and 2005 for the Quality and Control school groups for writing.
Although the data were not considered statistically significant, they indicate the following trends:

- a slight worsening in the performance of the Control schools with respect to writing over the three year period (downward trend)
- sustained improvement over the years 2003 to 2005 for the Quality schools
- the Quality schools start from a lower level of performance and almost ‘catch up’ to the Control schools over the three year period.

**KPI 3 - Number (Mathematics) Improvement**

The Interaction Chart in Figure 4.13 compares the improvement achieved over the years 2003 and 2005 for the Quality and Control school groups for number (mathematics).
Although the data are not considered statistically significant for the sample size obtained, they indicate the following trends:

- improvement in the performance of the Control schools with respect to mathematics over the three year period (upward trend)
- improvement in the performance of the Quality schools over the years 2003 to 2005
- again, the Quality schools start from a lower level of performance and ‘catch up’ to the Control schools during the three year period.

**KPI 4 – AIM Test Reading Improvement**

The Interaction Chart in Figure 4.14 compares the improvement achieved over the years 2003 and 2005 for the Quality and Control school groups for results achieved through the AIM standardised state-wide test for reading, for school years 5 and 7.
Although the data are not considered statistically significant for the sample size obtained, they show the following trends:

- improvement in the performance of the Control schools during 2003 to 2004 (upward trend), followed by a worsening of results in 2005 (downward trend). The results achieved for 2005 were higher than those for 2003.

- improvement in the performance of the Quality schools over the years 2003 to 2004 (upward trend), followed by a worsening of results in 2005. The results achieved for 2005 were higher than for 2003.

- the overall improvement achieved by the Quality schools is greater than that of the Control schools over the same period for this indicator. Again, the Quality schools start from a lower level of performance and ‘catch up’ to the Control schools over the three year period.
KPI 5 – AIM Test Number (Mathematics) Improvement

The Interaction Chart in Figure 4.15 compares improvement achieved over the years 2003 and 2005 for the Quality and Control school groups for results achieved through the AIM standardised state-wide test for number (mathematics), for years 5 and 7.

Although the data are not considered statistically significant for the sample size obtained, they show the following trends:

- improvement in the performance of the Control schools over the two year period 2003 to 2004 (upward trend), followed by a worsening of results in 2005 (downward trend). The results achieved for 2005 were higher than those achieved in 2003.

- improvement in the performance of the Quality schools over all three years 2003 to 2005 (an upward trend).

- the improvement achieved by the Quality schools is greater than that of the Control schools over the same period. The Quality schools start from a lower level of performance and ‘catch up’ to the Control schools over the three years.

Figure 4.15 Interaction Chart: Quality and Control School Improvement
AIM Test Number (KPI5) 2003 to 2005
KPI 6 – Parent Satisfaction Improvement

The Interaction Chart in Figure 4.16 compares the improvement achieved over the years 2003 and 2005 for the Quality and Control schools for results of the annual parent opinion survey with respect to their general satisfaction with the school.

Although the data are not considered statistically significant for the sample size obtained, they show the following trends:

- improvement in the performance of the Control schools from 2003 to 2004 (upward trend), followed by a worsening of results in 2005 (downward trend). The results achieved for 2005 were lower than those achieved in 2003 indicating an overall worsening of performance in this area for the three year period.

- improvement in the performance of the Quality schools over all of the three years 2003 to 2005 (an upward trend). The improvement achieved over the period 2003 to 2004 was greater than that achieved over 2004 to 2005

- the Quality schools start from a lower level of performance and ‘catch up’ to the Control schools over the three years.

Figure 4.16 Interaction Chart: Quality and Control School Improvement
Parent Satisfaction (KPI6) 2003 to 2005
KPI 7 – Staff Satisfaction Improvement

The Interaction Chart in Figure 4.17 compares the improvement achieved over the years 2003 and 2005 for the Quality and Control school groups for results of the annual staff opinion survey with respect to school morale.

Although the data are not considered statistically significant for the sample size obtained, they indicate the following trends:

- an overall worsening in performance of both the Quality and Control schools over the three year period, with a slight recovery in performance for both groups of schools over 2004 to 2005 (upward trend).
- the Quality schools start at, and maintain, a lower level of performance than that of the Control schools over the three year period.
Finding 3
When the data (Table 4.7) were examined with respect to change over consecutive years they revealed differences in improvement trends between the Quality and Control schools. Of the fourteen possible changes to performance for the seven key performance indicators over the three years 2003 to 2005; for the Control schools there were seven negative and seven positive changes. For the Quality schools however, there are twelve positive and two negative changes.

A Fishers Exact One-Tailed (Sign) Test revealed that the observed changes are very close to being statistically significant ($p = 0.052$).

This would suggest that school participation in the Quality in Schools program has had a positive effect on school improvement.

Finding 4
The high correlation between the results achieved for key performance measures one to five (i.e. those relating to student achievement), justifies their accumulation into a single average performance measure.

However, analysis revealed an insignificant difference in the improvements shown by the Control and Quality groups of schools ($F(2,19) = 2.003$, $p = .162$, effect Size = .174). The Interaction Chart shown in Figure 4.18 illustrates the improvement achieved by the Quality and Control schools as an average of KPI1 through KPI5.
Comparing the Improvement of Quality and Like Schools (State Averages)

Methodology

The seven key performance indicators for the Quality schools were statistically compared with Like School Group (LSG) State averages for the years 2003-2005.

The Victorian Department of Education used nine categories of ‘Like School Groups’ to provide for the comparison of the performance of similar schools, based on the socio-economic composition and language background of their students (discussed in chapter three).

Table 4.7 shows the number of schools used in the comparative analyses. Like School Groups 3 and 8 were not included as none of the 22 Quality schools in the sample were represented in these two categories.

A One-Factor-Within-Subjects MANOVA analysis was used to test the relationship.
Findings

Table 4.8 shows the results achieved through this analysis.

As discussed previously, the benchmarks used in interpreting the size of the Effect statistic are as follows (Cohen 1988):

- an Effect Size of 0.2 to 0.3 is considered small
- an Effect Size of 0.5 is considered medium
- an Effect Size of 0.8 to 1.0 is considered large

<table>
<thead>
<tr>
<th>School Type</th>
<th>No. of Schools</th>
<th>No. of Quality Schools</th>
<th>No. of Control Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Like School Group 1</td>
<td>224</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Like School Group 2</td>
<td>178</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Like School Group 3</td>
<td>26</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Like School Group 4</td>
<td>402</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Like School Group 5</td>
<td>109</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Like School Group 6</td>
<td>38</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Like School Group 7</td>
<td>327</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Like School Group 8</td>
<td>66</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Like School Group 9</td>
<td>161</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>1,531</td>
<td>22</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 4.7 Number of Schools in Sample of Like School Groups

<table>
<thead>
<tr>
<th>KPI</th>
<th>F(2,42)</th>
<th>p-value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPI 1 Reading</td>
<td>1.286</td>
<td>.287</td>
<td>.058</td>
</tr>
<tr>
<td>KPI 2 Writing</td>
<td>1.403</td>
<td>.257</td>
<td>.063</td>
</tr>
<tr>
<td>KPI 3 Number</td>
<td>1.496</td>
<td>.236</td>
<td>.067</td>
</tr>
<tr>
<td>KPI 4 AIM Reading</td>
<td>1.959</td>
<td>.154</td>
<td>.085</td>
</tr>
<tr>
<td>KPI 5 AIM Number</td>
<td>.838</td>
<td>.440</td>
<td>.038</td>
</tr>
<tr>
<td>KPI 6 Parent Satisfaction</td>
<td>.004</td>
<td>.996</td>
<td>.000</td>
</tr>
<tr>
<td>KPI 7 Staff Satisfaction</td>
<td>.946</td>
<td>.396</td>
<td>.043</td>
</tr>
<tr>
<td>Overall KPI1 to KPI5 (F2,20)</td>
<td>4.635</td>
<td>.022</td>
<td>.317</td>
</tr>
</tbody>
</table>

Table 4.8 MANOVA Analysis Results: Differences in Improvement Quality and Like Schools 2003 to 2005
The results (Findings 1 and 2) show:

**Finding 1**
The sample size was not sufficiently large for statistically significant results to be obtained. To detect a moderate Effect Size a sample of at least 30 Quality schools would be required for testing.

**Finding 2**
A comparison of the mean values of each of the key performance indicators for the Quality and *Like* schools revealed a greater overall trend in improved performance for the Quality schools compared to that of *Like* schools in all areas (Table 4.9 and Figures 4.19 to 4.25).

<table>
<thead>
<tr>
<th>KPI</th>
<th>Quality Schools (N = 22)</th>
<th>Like School Group State Averages (N=21)</th>
<th>Maximum Possible Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
<td>2005</td>
</tr>
<tr>
<td>KPI 1 Reading</td>
<td>4.00</td>
<td>4.03</td>
<td>4.06</td>
</tr>
<tr>
<td>KPI 2 Writing</td>
<td>3.95</td>
<td>3.97</td>
<td>4.01</td>
</tr>
<tr>
<td>KPI 3 Number</td>
<td>4.03</td>
<td>4.03</td>
<td>4.08</td>
</tr>
<tr>
<td>KPI 4 AIM Reading</td>
<td>3.19</td>
<td>3.35</td>
<td>3.30</td>
</tr>
<tr>
<td>KPI 5 AIM Number</td>
<td>3.19</td>
<td>3.26</td>
<td>3.36</td>
</tr>
<tr>
<td>KPI 6 Parent Satisfaction</td>
<td>5.15</td>
<td>5.20</td>
<td>5.22</td>
</tr>
<tr>
<td>KPI 7 Staff Satisfaction</td>
<td>73.56</td>
<td>69.33</td>
<td>70.08</td>
</tr>
</tbody>
</table>

**Table 4.9** Comparison of Means for Improvement in Quality and Like Schools 2003 to 2005

**KPI 1 - Reading Improvement**
The Interaction Chart in Figure 4.19 compares the improvement achieved between 2003 and 2005 for Quality schools and *Like School Group* State averages for reading.
Although the data are not statistically significant for the sample size obtained, they indicate the following trends:

- overall improvement in the performance of both the Quality and Like schools over the three year period (upward trend).
- the Quality schools start at, and maintain, a lower level of performance than that of the Like schools over the three year period although the overall improvement achieved over the three year period is greater.
KPI 2 - Writing Improvement

The Interaction Chart in Figure 4.20 compares the improvement achieved over the period 2003 and 2005 for Quality schools Like School Group State averages for writing. Although the data were not statistically significant for the sample size obtained, they indicate the following trends:

- overall improvement in the performance of both the Quality and Like schools over the three year period (upward trend).
- the Quality schools start at a lower level of performance than the Like schools however, their rate of improvement is such that they overtake the Like schools in 2005, achieving a higher level of performance for that year.

![Interaction Chart: Quality and Like School Improvement Writing (KPI2) 2003 to 2005](image-url)
KPI 3 – Number (Mathematics) Improvement

The Interaction Chart in Figure 4.21 compares the improvement achieved over the period 2003 and 2005 for Quality schools and Like School Group averages for number (mathematics).

![Interaction Chart: Quality and Like School Improvement Number (KPI3) 2003 to 2005](image)

KPI 4 – AIM Test Reading Improvement

The Interaction Chart in Figure 4.22 compares the improvement achieved over the years 2003 and 2005 for the Quality and Like School Group State averages for results achieved through the AIM standardised state-wide test for reading, conducted in school years 5 and 7.
Although the data were not statistically significant for the sample size obtained, they indicate the following trends:

- improvement in the performance of *Like* schools over the period 2003 to 2004 (upward trend), followed by a plateauing of results in 2005.

- improvement in the performance of the Quality schools over the years 2003 to 2004 (upward trend), followed by a worsening of results in 2005. The results achieved for 2005 were however, higher than those achieved in 2003.

- the overall improvement achieved by the Quality schools is greater than that of the *Like* schools over the same period, although, the Quality schools start from a lower level of performance, they are ‘catching up’ to the *Like* schools over the three year period.
KPI 5 – AIM Test Number (Mathematics) Improvement

The Interaction Chart in Figure 4.23 compares the improvement achieved over the years 2003 and 2005 for the Quality and Like School Group State averages for results achieved through the AIM standardised state-wide test for number (mathematics), conducted in school years 5 and 7.

Although the data were not statistically significant for the sample size obtained, they indicate the following trends:

- improvement in the performance of Like schools over the period 2003 to 2004 (upward trend), followed by a plateauing of results in 2005.
- improvement in the performance of the Quality schools throughout the period 2003 to 2005 (upward trend).
- the overall improvement achieved by the Quality schools is greater than that of the Like schools over the same period. The Quality schools start from a lower level of performance. Their performance in this area ‘catches up to’ and ‘overtakes’ the Like schools during this time.

![Interaction Chart: Quality and Like School Improvement](image)

**Figure 4.23** Interaction Chart: Quality and Like School Improvement
AIM Test Mathematics (KPI5) 2003 to 2005
KPI 6 – Parent Satisfaction Improvement

The Interaction Chart in Figure 4.24 compares the improvement achieved over the years 2003 and 2005 for the Quality and Like School Group State averages for results of the annual parent opinion survey with respect to their general satisfaction with the school.

Although the data were not statistically significant for the sample size obtained, they show the following trends:

- improvement in the performance of both the Quality and Like schools over the three year period 2003 to 2005 (upward trend).
- unlike for the other performance measures (KPIs) previously discussed for this assessment, the performance of the Quality schools starts at a higher level than that for the Like schools. This higher level of performance is sustained through the three year period.

![Figure 4.24 Interaction Chart: Quality and Like School Improvement Parent Satisfaction (KPI6) 2003 to 2005](image)
KPI 7 – Staff Satisfaction Improvement

The Interaction Chart in Figure 4.25 compares the improvement achieved over the years 2003 and 2005 for the Quality and Like School Group State averages for results of the annual staff opinion survey with respect to school morale.

Although the data were not statistically significant for the sample size obtained, they show the following trends:

- an overall worsening in performance of both the Quality and Like schools over the three year period, with a slight recovery in performance for the Quality schools over the two year period 2004 to 2005 (upward trend).
- as with parent satisfaction, the Quality schools start at, and maintain, a higher level of performance for this indicator than that of the Like schools over the three year period.

![Interaction Chart: Quality and Like School Improvement Staff Satisfaction (KPI7) 2003 to 2005](image-url)
Finding 3

The high correlation between the results achieved for key performance measures one to five (i.e. those relating to student achievement), justifies their accumulation into a single average performance measure.

Analysis revealed a statistically significant difference in the improvements shown by the averages of the Quality and the Like groups of schools \( F(2,20) = 4.635, p = .022, \) Effect Size = .317). The Interaction Chart shown in Figure 4.26 illustrates the improvement achieved by the Quality and Like schools as an average of KPI1 through KPI5.

![Interaction Chart: Quality and Like School Improvement: Combined Student Achievement (KPIs 1 to 5) 2003-2005](image)

Summary

In summary, while not statistically significant, trends within the results show that:

- Quality schools demonstrated a greater rate of improvement of performance over the 2003 to 2005 three-year period than the Control schools for six of the seven school performance indicators. The exception being staff satisfaction (Figure 4.27)
Quality schools demonstrated a greater rate of improvement of performance over the 2003 to 2005 three-year period than their Like group schools for all seven school performance indicators (Figure 4.28).

Quality schools demonstrated a statistically significant greater rate of improvement of performance over the 2003 to 2005 three-year period than their Like Group schools for combined school performance indicators relating to student achievement (Figure 4.26).

**Research Question/Hypothesis 4: Challenges of School Improvement**

**Research Question**

“What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the Quality in Schools program as for the schools that did not?”

**Hypothesis**

The challenges to school improvement experienced by schools that participated in the Quality in Schools program are different to those experienced by Control schools that did not participate in the program.

**Measures**

Qualitative perception data were used for the purpose of assessing the nature of the challenges experienced by participating schools.

Quantitative data were used to assist with assessing possible barriers to deployment of the Quality Improvement approach.
Figure 4.27 Column Chart: Improvement in Quality and Control
School Key Performance Indicators 2003-2005
Figure 4.28 Column Chart: Improvement in Quality and Like Schools Key Performance Indicators 2003-2005
**Methodology**

The following analyses were performed in order to answer this research question:

1) Content analysis of qualitative perception data relating to the challenges to school improvement identified by participating schools. The sample for this analysis comprised 22 Quality schools and five Control schools.

2) Assessment of quantitative data relating to challenges usually associated with a negative impact upon organisational improvement interventions; including changes to leadership, school size, time passed since the intervention and changes to original team members. The sample for this analysis comprised 22 Quality schools.

**Identifying the Challenges of School Improvement: Perception Data Analysis**

The qualitative perception data related to three open-ended questions which were answered by each school that participated in the self-assessment process. The questions were:

- “What do you consider to be three key characteristics of an excellent school?”
- “What are three things that drive improvement in your school?”
- “What are three things that prevent improvement in your school?”

The data was analysed by identifying the major themes emerging in the answers given and recording the number of times the theme or response occurred. Frequency Charts were created for each of the questions so that the most commonly occurring theme associated with the answers given could be identified.

**Findings**

The results of this analysis are presented in Figures 4.29, 4.30 and 4.31.

The results show (Findings one to three):
Finding 1 - Characteristics of an Excellent School

The top four most frequently identified characteristics of an excellent school by the Quality schools were: Shared Vision, Teamwork, Leadership and Engaged Staff (Figure 4.29).

The top four most frequently identified characteristics of an excellent school by the Control schools were: Shared vision, Leadership, Community involvement and Staff professionalism (Figure 4.29).

The Quality and Control schools shared two of the four top responses to the question “What do you consider to be three key characteristics of an excellent school?” (Figure 4.29).

The two groups of schools differed in that the Control schools believed that parent and community involvement was a key characteristic of an excellent school, and the Quality schools’ believed that staff teamwork and collaboration, was a more important characteristic.

Interestingly, this mindset is reflected in the performance of the Quality schools in this area. Their performance in the area of staff satisfaction was better than that of the Control schools (a finding reported earlier in this chapter). Also, the depth of deployment of the principle relating to ‘People’ was greater for the Quality schools compared to the Control schools. It would appear that the Quality schools value people and relationships more highly than the Control schools, and their actions and behaviours reflect this.

Finding 2 - Drivers of School Improvement

The top three most frequently reported drivers of school improvement were shared by the Quality and Control schools: Data, Leadership and Willingness to improve (Figure 4.30).

The Control schools gave equal weighting to a fourth key driver of improvement: Planning.

Quality schools differed here with greater weighting given to: Clear direction.

Great emphasis was placed on the need for shared direction and focus as the basis for planning in the professional development associated with Quality in Schools. It seems that this may have resonated with these schools.
Figure 4.29  Column Chart: Characteristics of an Excellent School - Quality and Control Schools
Finding 3 - Barriers to School Improvement

The top two most frequently identified restraining forces associated with school improvement identified by the Quality schools were: Funding and Time (Figure 4.31).

The top two most frequently identified restraining forces associated with school improvement identified by the Control schools were: Fear and resistance to change and Low expectations of students.

Interestingly, several attributes were identified by the Control schools and not the Quality schools, these included: Processes not being followed, Clear timelines, Role clarity and Lack of recognition between equity and equality. This would suggest that the Quality Improvement approach might help schools to overcome these barriers.

The Impact of Various Challenges on the Deployment of Quality Improvement

Data were collected from each participating school to assess the impact of specific challenges on the deployment of the Quality Improvement approach, namely:

a) whether or not the incumbent of the role of senior leader of the school (i.e. the school principal) was the same person who undertook the professional development

b) the size of the school (measured in terms of the number of students enrolled)

c) the number of years the approach had been deployed (the time period between completion of the training and the final year of data collection - 2005)

d) the number of original members of the team that undertook the professional development remaining at the school.

a. Changes to Leadership

Information was collected from each of the Quality schools to determine whether or not the incumbent in the role of senior leader of the school (i.e. the school principal) was the same person who undertook the professional development.
Figure 4.30  Column Chart: Drivers of School Improvement
Figure 4.31  Column Chart: Barriers to School Improvement
Hypothesis
The proposition being tested is that one would expect that a change in leadership during the deployment of a cultural change intervention to affect application in a negative way. The literature also emphasises the critical role of leadership in the implementation of change. In particular, the importance of constancy of purpose with respect to senior leadership, including role modeling the change expected in others.

“Constancy of purpose basically means maintaining a focus on the important long term vision… Leaders establish constancy of purpose by anticipating and assessing the impact of future changes, nursing culture of the organisation needed to adopt the changes, and implementing the changes necessary to make the vision a reality” (ASQ 2007)

“We must become the change we want to see” Mahatma Ghandi.

“Let him who would move the world, first move himself” Socrates.

“Example is not the main thing in influencing others. It is the only thing” Albert Schweitzer.

Methodology
The analysis conducted was an Independent Samples t-Test for Equality of Means.

Findings
The results are shown in Table 4.10.

<table>
<thead>
<tr>
<th>Principal Constant (Yes/No)</th>
<th>Mean Score (Maximum Possible Score = 72)</th>
<th>Number of Schools</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>43.4</td>
<td>14</td>
<td>8.60</td>
</tr>
<tr>
<td>Yes</td>
<td>47.7</td>
<td>8</td>
<td>6.09</td>
</tr>
</tbody>
</table>

Table 4.10 Analysis Results: Effect of Change in Leadership on Total Self-assessment Score
The data showed that of the 22 schools in the Quality schools sample, 14, or 63 percent, had experienced a change in senior leadership since participating in the program.

The fact that a large number of Quality schools experienced a change in leadership could be a factor in explaining why a more significant improvement in performance has not been observed through this study. The schools themselves identified leadership as a critical driver of school improvement and a key characteristic of an excellent school (reported earlier in this chapter).

As expected, the self-assessment score was higher for schools where the principal had stayed the same (a difference in the resulting means).

One would expect the self-assessment scores (reflecting Quality Improvement deployment) to be less in those schools that had experienced a change in the senior leadership of the school, than those where the principal-ship had remained constant throughout the deployment period.

No significant difference was found ($t(20) = 1.248$, $p = 0.226$, $N = 22$). A sample size of sixty-four (64) schools would be required to show a significant difference for a difference of this magnitude (Cohen 1988).

However the Effect Size (calculated by dividing the difference between the group means by the square root of the ‘pooled variance estimate (Francis 2007) is moderate at 0.5.

This suggests that a change in principal at the school during deployment of the change initiative did impact negatively upon the outcome.

b. School Size

Information was collected from each Quality school to determine whether or not the size of the school (measured in terms of the number of students enrolled) influenced the deployment of the Quality Improvement approach.
**Hypothesis**

The proposition being tested is that one would expect a larger school (one with a greater number of students and therefore staff) would impact upon the rate of deployment of a cultural change intervention in a negative way.

The literature reports increased difficulty associated with effecting change in larger organisations. The problems associated with training a large number of staff and changing the culture of large organisations is well tested and documented.

**Methodology**

The analyses conducted were an Independent Samples t-Test for Equality of Means and Spearman’s Rank Correlation.

**Findings**

The 22 Quality schools tested ranged in size from 129 to 1,450 students with a median of 422 students.

Results of the analysis are shown in Table 4.11.

<table>
<thead>
<tr>
<th>School Size</th>
<th>Mean Score (Maximum Possible Score = 72)</th>
<th>Number of Schools</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 422</td>
<td>45.27</td>
<td>11</td>
<td>8.43</td>
</tr>
<tr>
<td>More than 422</td>
<td>44.73</td>
<td>11</td>
<td>7.77</td>
</tr>
<tr>
<td>Total</td>
<td>45.00</td>
<td>22</td>
<td>7.92</td>
</tr>
</tbody>
</table>

Table 4.11 Results of Analysis: Effect of School Size on Total Self-assessment Score

The analyses failed to show any significant difference in the deployment of the approach with regard to the size of the school, as reflected in the self-assessment score reported by large (greater than 422 students) and small (less than 422 students) Quality schools.
Comparing the deployment for school sizes below and above the median did not detect a significant difference (i.e. \( t(20) = 0.158, p = 0.876 \)). No significant correlation was found when Spearman’s Rank Correlation was used to measure the correlation between deployment and the number of students (i.e. \( r = -0.189, p = 0.400, N = 22 \)).

The Effect Size was 0.064.

This means that deployment of the *Quality Improvement* approach was not significantly impacted by variation in school size.

c. **Number of Years Deployment of Quality Improvement**

Information was collected from each Quality school to determine whether or not the number of years the approach had been deployed (i.e. the time period between completion of the training and the final year of data collection - 2005) influenced the depth of deployment of the *Quality Improvement* approach.

**Hypothesis**

The proposition being tested is that one would expect a school that had a greater amount of time to adopt the approach would, have deployed it to a greater extent and thus report a higher total score in the self-assessment.

The literature reports the difficulty of effecting change in organisations with respect to the time taken for it to take effect. Changing the culture of an organisation is estimated to take between five and ten years in most of the documented research in this area (Hargreaves 1997, Reigle 2001).

An alternative view to this would be that deployment would weaken with the passage of time.

**Methodology**

A One-Way Analysis of Variance test was performed.
Findings

Five of the schools had completed the Quality in Schools training six years previously, five of the schools five years previously, three of the schools four years previously, and nine of the schools three years previously.

The results of the analysis are shown in Table 4.12.

<table>
<thead>
<tr>
<th>Number of Years Applied</th>
<th>Mean Score (Maximum Possible Score = 72)</th>
<th>Number of Schools</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>42.2</td>
<td>9</td>
<td>8.5</td>
</tr>
<tr>
<td>4</td>
<td>51.0</td>
<td>3</td>
<td>6.0</td>
</tr>
<tr>
<td>5</td>
<td>43.4</td>
<td>5</td>
<td>9.60</td>
</tr>
<tr>
<td>6</td>
<td>48.0</td>
<td>5</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>45.0</td>
<td>22</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Table 4.12 Results of Analysis: Effect of Number of Years Deployment on Total Self-assessment Score

The One-Way Analysis of Variance failed to detect a significant relationship between Quality Improvement with respect to deployment time and depth (i.e. $F(3,18) = 1.306, p = 0.303$, Partial Eta Squared = 0.179, $N = 22$).

Partial Eta Squared is a measure of Effect Size calculated using the ANOVA table. The result obtained for this analysis (at 0.179) indicates that only about 17 percent of the variation observed in the depth of deployment can be explained by differences in the number of years of deployment (Francis 2007).

This suggests that deployment of the Quality Improvement approach is impacted by other more significant factors than the passage of time.
d. Changes to Trained Team Members

Additional information was collected from each Quality school to determine whether or not the number of original team members that undertook the two-year Quality in Schools’ professional development remaining at the school, affected the extent to which the Quality Improvement approach had been deployed.

Hypothesis

The proposition being tested is that one would expect a school that had a consistent team trained in, applying and coaching others at the school in the thinking, strategies and methods would have deployed the approach to a greater extent, and thus report a higher total score in the self-assessment. Where the knowledge had been lost from the school, one would expect a lesser degree of deployment.

Methodology

A Spearman’s Rank Correlation and Analysis of Variance analyses were performed to test the relationship between the level of deployment of Quality Improvement and the number of original team members remaining at the school in 2008.

Findings

Most of the participating schools had five original team members undertake the Quality in Schools training. None of the schools taking part in the study had retained all of the original five team members. Two of the 22 schools had retained four of the original five team members. Four had retained three of the original five members. The remaining majority of schools – 16 – had lost more than half of their original group of trained team members.

The results are shown in Table 4.13.

The analysis failed to show any significant correlation between depth of deployment and the number of the originally trained team members remaining at the school for the 22 schools tested. This result was confirmed in an Analysis of Variance test ($F_{3,18} = 0.933, p = 0.44$, partial eta squared = 0.135, $N = 22$).
The Partial Eta Squared result, as a measure of Effect Size indicates that only 13 percent of the variation observed in the depth of deployment can be explained by differences in the number of team members remaining at the school (Francis 2007).

This suggests that the deployment of the approach is impacted by other factors more significant than changes in the number of people trained in the school over time.

<table>
<thead>
<tr>
<th>No. of Original Team Members Remaining</th>
<th>Mean Score (Maximum Possible Score = 72)</th>
<th>Number of Schools</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44.0</td>
<td>5</td>
<td>8.87</td>
</tr>
<tr>
<td>2</td>
<td>43.3</td>
<td>10</td>
<td>8.42</td>
</tr>
<tr>
<td>3</td>
<td>50.2</td>
<td>5</td>
<td>6.83</td>
</tr>
<tr>
<td>4</td>
<td>43.0</td>
<td>2</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>45.0</td>
<td>22</td>
<td>7.92</td>
</tr>
</tbody>
</table>

Table 4.13  Results of Analysis: Effect of Changes to Team Members on Total Self-assessment Score

**Summary**

In summary a qualitative analysis revealed that the Quality and Control schools displayed some major differences with respect to their thinking about school improvement. In particular:

- Quality schools see teamwork, collaboration and a cohesive staff as essential elements of an excellent school
- Quality schools highlighted a key driver of improvement in the schools as a shared and clear direction and a focus on improvement
- Quality schools see the main barriers to school improvement as time and adequate funding
• Control schools report the main barriers to improvement as low expectations of students and resistance to change, blaming people. They also identified other barriers not reported by Quality schools including: processes not being followed, clear timelines, and role clarity.

These results suggest that the Quality schools have developed a different mindset with respect to their thinking about school improvement to the Control schools, and that the Quality in Schools program has influenced this.

It should be noted however, that as the sample size for the Control schools was small (data from only five schools was available for this analysis) the results should therefore be interpreted with caution.

The results of other analyses associated with specific challenges to school improvement including changes to leadership, the number of trained team members, school size and the duration of deployment, showed that the level of deployment of the Quality Improvement approach assessed in 2008 was negatively impacted by a change in leadership during the deployment period.

However, the depth of deployment was not impacted significantly by:

• the size of the school
• the time passed since the training was completed - or length of deployment time
• the number of original team members (who attended the training) remaining at the school.

The findings suggest that the Quality in Schools process may be resilient to a number of the usual challenges that can stall or derail a change intervention, but is negatively impacted by changes to senior leadership.
Findings Relating to Sample Size

For a number of the findings reported in this chapter statistical significance could not be demonstrated due to the research achieving a sample size smaller than that required.

The sample size used for the study was 22 schools, and a further 21 Control schools (totalling 43 schools). A sample size of double to triple this would be required to prove statistical significance of the analyses conducted (Power Analyses (Cohen 1988)).

Obtaining a sufficient number of schools willing to participate in the study proved to be difficult and time consuming due to the following constraints:

- initial contact was made with all schools by telephone. Where the senior leader, or an ex-team member of the Quality in School’s team, could not be located at the time of the phone call, a message was left requesting a call back. In the majority of cases a call back was not received. Follow up calls made by the researcher would encounter the same recurring problem.

- schools are inundated with requests from numerous different organisations and students demanding their time for research and other purposes. They are not eager to participate in anything that will further deprive them of focussing on the priorities of the school including those activities they are responsible and accountable for. Convincing them to take part in studies external to those conducted by the Department of Education is challenging!

- it is assumed that there would be reluctance on the part of schools that may be ‘underperforming’ to share their performance and improvement data.
Conclusion

This chapter presented the findings of the research undertaken. The qualitative and quantitative data obtained through the course of deployment of the research methodology was analysed and discussed.

The findings of the study in terms of the research may be summarised with respect to the research questions as follows:

Research Question 1

“Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than schools that did not participate in the program?”

The proposition is that the Quality schools – those schools that participated in the Quality in Schools program - have deployed the Quality Improvement approach to a greater degree than the Control schools (i.e. matched schools that did not participate in the program).

Analysis revealed that the responses of the Quality schools exceeded those of the Control schools in all of the twelve areas (comparison of means), and that this was statistically significant in seven of the 12 areas of deployment: Principle 2 Planning, Principle 6 Data, Principle 7 Variation, Principle 8 People, Principles 10 and 11 Stakeholders and Principle 12 Leadership, and Item 13 Change.

The Control schools therefore appeared much weaker than the Quality schools in the following areas:

- the use of data
- understanding of process and system variation
- involving and recognising the role of the people of the organisation in improvement
• leading improvement
• managing stakeholder relationships
• their approach to change.

These are areas representing a significant change to traditional thinking for many people and are areas stressed as requiring critical focus in applying the Quality Improvement approach to bring about continuous school improvement.

In addition, statistical significance was demonstrated with respect to greater deployment of the approach overall by Quality schools. That is the total self-reported assessment scores for the Quality schools exceeded those of the Control schools.

A further analysis was conducted to test for differences in deployment of Quality Improvement by primary and secondary schools, the proposition being that due to their smaller size, organisational structure and lesser complexity, primary schools would demonstrate a greater level of deployment than secondary schools.

The results suggest that deployment of Quality Improvement approach is greater in primary schools than secondary schools. This difference was shown to be statistically significant.

Research Question 2

“How does adopting the Quality Improvement approach impact upon school performance?”

The proposition is that the greater the depth of deployment of the Quality Improvement approach, the greater is the performance achieved by a school.

Analysis revealed a significant correlation between the total self-assessment score reported by the Quality schools and the key performance indicator relating to Staff Satisfaction. That is, the greater the depth of deployment of the Quality Improvement approach, the greater the level of staff morale and the school employees’ overall experience of the workplace.
There were no statistically significant correlations detected for any of the other performance indicators.

A significant correlation was observed in testing the relationships existing between the key performance indicators for reading, writing and number. This validates the expectation that schools demonstrating a higher level of performance in reading show a higher level of performance in writing. Also, schools that demonstrate a higher level of performance in reading and writing, show greater proficiency in mathematics or number.

Analysis of depth of deployment for primary schools and performance against the key performance indicators for learning at all year levels (prep to six), revealed a significant but weak positive correlation for reading, writing and number.

A limitation was noted with respect to the small sample size. A power analysis revealed that a total sample size of 46 rather than 22 schools would be needed to detect correlations as small as 0.40, and a sample size of 28 schools to detect correlations of 0.50.

Difficulties experienced with obtaining a larger sample size for the purpose of conducting this extended testing prevented the collection of more data.

A further limitation was noted in using 2008 deployment data and 2003, 2004 and 2005 performance data. The effect of this time lag is not understood.

**Research Question 3**

“Do the schools that participated in the Quality in Schools program show greater improvement than the Control schools that did not participate in the program?”

The proposition is that the Quality schools, that have been trained in and have deployed the Quality Improvement approach, will demonstrate greater improvement over the time period tested (2003 to 2005) than the matched Control school group.
Although the analysis failed to show that the results were statistically significant, when the means were compared and illustrated graphically, the data showed that in most cases the Quality schools started at a lower performance base than the Control schools, and tended to ‘catch up’ to the Control schools, i.e. improve at a greater rate, between 2003 and 2005. The Control schools either stayed at the same or achieved lower levels of performance over this same period.

The performance of a Sign Test on the data showed it to be very close to statistically significant (i.e. \( p = 0.052 \)).

This suggests that the *Quality in Schools* program has had a positive effect on school improvement despite the fact that there were no statistically significant differences detected between the Quality and Control schools.

Limitations were noted relating to the size of the sample (small) which prevented statistically significant results. Also, deployment data were not available for 17 of the Control schools to allow for comparative testing to be performed. This meant that the comparison of Quality and Control schools in terms of deployment of *Quality Improvement* was less powerful than it might have been.

The positive trends shown by the data with respect to the overall improvement of the Quality schools would therefore need to be substantiated with a larger sample size – a greater number of schools would need to be tested.

The effect sizes for reading and writing were moderate, again suggesting that with a larger sample size, a significant result might have been evident. The sample size would need to be doubled or tripled for both the Quality and Control schools in order for this analysis to be sufficiently powerful to detect moderate effect sizes.

Comparing the key performance indicators for the Quality schools over the years 2003-2005 with *Like School Group* (LSG) state averages for all seven indicators failed to reveal any statistically significant outcome. Again, the sample size was not sufficient for statistically significant results to be obtained. At least 30 Quality schools would have to be for tested in order for the analysis to be sufficiently powerful.
However, when the means for the schools were compared, and the data presented graphically, they showed that the Quality schools improved to a greater extent between 2003 and 2005 than the Like School Group State averages for all indicators.

When the student learning outcome measures were combined, the Quality schools showed a statistically significant greater rate of improvement over the years 2003 to 2005 than their Like school averages.

This would suggest that the Quality in Schools program has had a positive effect on improving school performance over time.

**Research Question 4**

“What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in Quality in Schools to those schools that did not?”

The qualitative component of the study focused on asking three open-ended questions of each school that participated in the self-assessment process. The questions asked the schools to identify the key characteristics of an excellent school, name three drivers of improvement at their school, and nominate three key things that prevent improvement at the school.

The Quality and Control schools shared two of the four top responses for the characteristics of an excellent school relating to shared direction and leadership. For the two different responses, Control schools believed that parent and community involvement and staff professionalism were key characteristics, whereas the Quality school’s identified teamwork and collaboration, and a motivated, enthusiastic staff, as more important.

Interestingly, this was reflected in the performance of the Quality schools, with respect to the depth of deployment of the principle relating to People which was greater for the Quality schools compared to the Control schools (i.e. the Quality schools activities and behaviours reflected a greater valuing of collaboration and people by the organisation).
The top three most frequently reported drivers of school improvement by both
the Quality and Control schools were again shared – Data, Leadership and
Willingness to improve/attitude to change. The Control schools gave equal
weighting to a fourth key driver of improvement – Planning. Quality schools
differed here with greater weighting given to Clear direction/vision and focus on
improvement. Great emphasis was placed on the need for shared direction and
focus as the basis for planning in the professional development associated with
Quality in Schools. It seems that this may have resonated with these schools.

The restraining forces or barriers to school improvement identified by Quality
and Control schools differed. Quality schools named the main barriers as funding
and time. The top two most frequently identified restraining forces associated
with school improvement identified by the Control schools were associated with
apportioning blame with key stakeholders, that is; fear and resistance to change by
staff and teachers’ low expectations of students.

Teachers’ having low expectations of students has been shown to have significant
impact on learning achievement outcomes (Hattie 2009).

Different attributes were also identified by the Control schools as preventing
improvement these included: processes not being followed, clear timelines and role
clarity. Again, these were areas emphasised and for which strategies were
provided in the professional development associated with Quality in Schools.

This finding reveals a significant difference in the thinking about improvement
between the two groups of schools.

A further finding of this part of the research relates to the apparent resilience of
the program, contrary to expectations, to churn in the members of the trained
team, school size and the time passed since the training was completed. The
study found that the depth of deployment of the Quality Improvement approach
was not impacted to a great extent by any of these specific challenges that would
normally be associated with the stalling or failure of a change strategy. The
findings did show that deployment of the approach was negatively impacted by
changes to senior leadership of the school.
The results of the qualitative analysis show that Quality Improvement did have a positive effect on the Quality schools. This, together with the trends demonstrated through the quantitative analysis, suggests that the program was worthwhile and is sustainable.

**Use of the Research Methodology for the Evaluation of Other School Change Strategies**

Overall the methodology was found to work well. Feedback from participating schools revealed that they found the self-assessment process to be a productive and useful one, in that it provided opportunity, structure and a collaborative space for reflection to inform planning. They also reported that the instrument was easy to use, and the process simple to follow. Several schools advised that the format of the instrument provided a very useful ‘vision of excellence’ or explicit detail as to what the approach entailed, and gave participants critical information regarding ‘what to do next’ to further improve their continued application of the approach.

It is believed that the methodology could be improved to overcome a limitation observed relating to the need for evidence to be provided to validate the score reported by participants.

The methodology could easily be adapted for use in the evaluation of other school improvement strategies. As noted in the literature review, there appears to be few reviews taking place, given the many change strategies in operation at any time within the school education sector.
Summary

The following diagram (Figure 4.32) summarises which of the hypotheses are supported by the findings of the analyses reported in this chapter.

Figure 4.32  Summary of Research Findings
This page intentionally blank.
Chapter Five

Discussion

Introduction

The purpose of this chapter is to:

- discuss the findings of the research with reference to the research questions
- discuss the findings of the research with respect to the literature review.

Discussion of the Research Findings: the Research Questions

This study set out to determine whether a Quality Improvement business model, proven to be effective in the improvement of performance and productivity in industry, can be successfully applied to a school setting.

The objective of this study was to assess the impact of the Quality in Schools program, a school training initiative of the Australian Quality Council in partnership with the Victorian Department of Education and Training. The basis of the investigation was to examine the relationship between deployment of the Quality Improvement approach and school performance and improvement.

The research focused upon a randomly selected group of 22 schools that had participated in the Quality in Schools program, comparing their performance and improvement to a Control group of matched schools, and ‘like’ (demographically similar) schools of the broader Victorian school population.
This section discusses the findings made through the research analyses (presented and discussed in Chapter Four), using the research questions and hypotheses as a basis for review.

Table 5.1 summarises the findings made.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have the schools that participated in the <em>Quality in Schools</em> program deployed the <em>Quality Improvement</em> approach to a greater degree than schools that did not participate in the program?</td>
<td><strong>Hypothesis 1</strong> - The schools that participated in the <em>Quality in Schools</em> program have deployed the <em>Quality Improvement</em> approach to a greater degree than the Control schools that did not participate in the program.</td>
</tr>
</tbody>
</table>
| 2. How does adopting the *Quality Improvement* approach impact upon school performance? | **Hypothesis 2** - The greater the depth of application of the *Quality Improvement* approach by a school; the greater the school’s performance measured in terms of:                                                                                                          - student achievement (at one point in time)  
  - staff satisfaction (at one point in time)  
  - parent satisfaction (at one point in time).                                                                                                    |
| 3. Do the schools that participated in the *Quality in Schools* program show greater improvement than schools that did not participate in the program? | **Hypothesis 3** - The rate of school improvement of the schools that participated in the *Quality in Schools* program is greater than the Control schools that did not participate in the program measured in terms of:                                                                                                         - improvement in student achievement (over time)  
  - improvement in staff satisfaction (over time)  
  - improvement in parent satisfaction (over time).                                                                                             |
| 4. What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the *Quality in Schools* program as for the schools that did not? | **Hypothesis 4** - The challenges to school improvement experienced by schools that participated in the *Quality in Schools* program are different to those experienced by Control schools that did not participate in the program.                                                                                     |
**Research Question/Hypothesis 1: Deployment of Quality Improvement Quality versus Control Schools**

“Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than schools that did not participate in the program?”

The difference in the depth of the deployment of the Quality Improvement approach by the Quality schools and Control schools was tested.

The following findings were made based on the findings achieved:

1. **The level of deployment of the Quality Improvement approach was greater in those schools that had participated in the Quality in Schools program than those that did not.** Quality schools showed a statistically significant greater deployment of the approach than the Control schools.

It follows that participation in the Quality in Schools program leads to increased understanding and application of the Quality Improvement theory, strategies and methods by schools.

2. **The schools that participated in the Quality in Schools program showed statistically significant greater strengths in the areas of data, planning, variation, stakeholders, people, leadership and change**

Schools that participated in the program showed increased activity in, and understanding of:

- the use of data to inform planning, decision making and improvement
- process and system variation
- involving and recognising the role of the people working in the organisation in improvement
- leadership for improvement
- managing stakeholder relationships
- their approach to, and management of, change.
Research Question/Hypothesis 2: Impact of Deployment of Quality Improvement on School Performance

“How does adopting the Quality Improvement approach impact upon school performance?”

The relationship between the deployment of the Quality Improvement approach (assessed in 2007/8) and selected school key performance indicators for 2005 was compared for Quality and Control schools.

The following findings and conclusions were made:

1. **Deployment of the Quality Improvement approach was found to be statistically positively correlated with an increase in staff satisfaction**

In the case of the combined Quality and Control school sample (totalling 28 schools), a moderate statistically significant correlation was found between deployment of the Quality Improvement approach (reflected in the total self-reported scores for 2008) and the key performance indicator for staff satisfaction in 2005.

Deployment of the Quality Improvement approach is therefore associated with improved employee morale within a school.

2. **The deployment of the Quality Improvement approach was found to be statistically positively correlated to increased performance in primary school student reading, writing and number**

The study found a significant but weak correlation between total self-assessment scores (reported in 2008), and actual performance in primary schools for key performance indicators relating to reading, writing and number (mathematics) across all year levels from prep to six for 2005.

There is therefore evidence to suggest that the greater the depth of deployment of the Quality Improvement approach, the greater the expected performance in primary student learning in the areas of reading, writing and number.

A similar analysis was not conducted for secondary schools as there were only three secondary colleges included in the study.
3. No statistically significant relationship was identified between deployment of the *Quality Improvement* approach and parent satisfaction

The relationship between the deployment of the *Quality Improvement* approach (reflected in the total self-reported score for 2008) and the key performance indicator for parent satisfaction for 2005 was investigated.

The study failed to detect a correlation between the depth of deployment of the *Quality Improvement* approach and parent satisfaction for 2005 for all schools.

3. Deployment of the Quality Improvement approach is sustainable over time

The study revealed that Quality schools had continued to deploy the *Quality Improvement* approach to a greater degree than Control schools despite the passing of four to eight years since the *Quality in Schools* training was completed.

**Research Question/Hypothesis 3:**

**Impact of the Quality in Schools Program on School Improvement**

“Do the schools that participated in the Quality in Schools program show greater improvement than schools that did not participate in the program?”

1. The study failed to demonstrate statistically significant difference in the rate of improvement of the *Quality* and Control schools

For this part of the investigation, the performance data for the Quality and Control schools was statistically analysed for the years 2003, 2004 and 2005 to compare the extent to which improvement was achieved by both groups of schools.

Although statistical significance could not be established; quantitative evidence (through a comparison of mean values) showed that the rate of improvement achieved by the *Quality* schools was greater than that of the Control schools over the period 2003 to 2005 for all of the parameters tested with the exception of staff satisfaction.
This would suggest that school participation in the *Quality in Schools* program and the subsequent deployment of the *Quality Improvement* approach, has had a positive effect on school improvement over time with respect to learning outcomes and parent satisfaction. In each of these areas, the Quality schools started at a lower performance base than the Control schools in 2003, and over the period 2004 and 2005 ‘caught up’ to the performance of the Control schools.

2. The Quality schools showed a **statistically significant** greater rate of improvement when compared to Like Group School State averages for combined Student Learning Outcome performance measures

The improvement achieved by the Quality schools for the period 2003 to 2005 was compared to that of a larger sample of *Like* schools. These are schools across the State of Victoria considered by the Victorian Department of Education as belonging to a similar demographic for the purpose of comparing performance.

A comparison of the mean values of each of the performance indicators showed that the Quality schools had achieved greater, but not statistically significant, improvement over the three years 2003 to 2005, than other schools in their Like School Groupings for all key performance indicators.

However, when the Student Learning Outcome measures (key performance indicators one to five) were combined, the Quality Schools showed a statistically significant greater rate of improvement for the years 2003-2005 than their like school averages.

This suggests that the *Quality Improvement* approach has a positive impact on school improvement over time, and demonstrates a statistically significant effect on student learning outcome improvement over time.
Research Question/Hypothesis 4: The Challenge of School Improvement

“What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the Quality in Schools program as for the schools that did not?”

1. Quality and Control schools experience different challenges and think differently about improvement

For this part of the study, qualitative data collected from participating Quality and Control schools was assessed for the major themes emerging from the answers given by participants to specific questions about their approach to improvement.

The questions related to the school’s focus on improvement and asked participants to describe the characteristics of an excellent school, and what they felt were the key driving and inhibiting factors of the improvement efforts of their school.

The study revealed several significant differences in the thinking of the Quality and Control schools, reflective of cultural differences between these schools with respect to their beliefs about what drives school improvement.

The Quality schools identified one of the most important characteristics of an excellent school as staff collaboration and teamwork. This focus was reflected in the significantly better performance and improvement demonstrated by the Quality schools in the area relating to staff satisfaction (discussed earlier).

A person’s right to joy in their work – job satisfaction - is one of the underpinning concepts and expected outcomes of adopting the Quality Improvement philosophy (Deming 1994). The findings of this study reinforce this as being the case.

Quality schools placed greater emphasis on the importance of a shared direction (purpose, vision and goal alignment) and a focus on improvement as key drivers of improvement at their school. This was again emphasised in the training and is a strong focus of the philosophy of Quality Improvement.
The approach provides strategies and methods for creating a common direction and focus among stakeholders by facilitating the gathering of input and building shared commitment and ownership.

Deployment data demonstrated that Quality schools placed greater emphasis on planning, the use of data, understanding variation, the role of the people working in the organisation in improvement, leadership, their approach to change and the managing of stakeholder relationships.

There were also differences observed in terms of the barriers to school improvement identified by the Quality and Control schools. Quality schools emphasised funding and time as the major barriers to school improvement. The Control schools isolated low expectations of students as the most significant obstacle to progress, together with resistance to change by staff (i.e. blaming students and staff for a lack of progress with improvement).

The *Quality in Schools* program emphasised the importance of high teacher expectations of all students. And more specifically, a belief in the ability of all children to learn well when there is constant effort applied to their involvement in the continuous improvement of the learning system and processes, of which they are a part (AQC 2002). The *Quality Improvement* approach focuses on the improvement of processes and systems responsible for driving performance and behaviour and delivering outcomes. The approach provides practical strategies and tools for effecting this improvement, and although cultural change takes place over the longer term, immediate benefits can be realised that increase confidence and foster progress. This can help to overcome resistance to change.

Other strategies of the *Quality in Schools* program also aimed at minimising resistance included encouraging participants to ‘role-model’ rather than impose their learning on others in the school. School leaders were asked not to ‘mandate the approach’ but to consult with everyone and invite volunteers to participate. The team of volunteers from each school that attended the training were encouraged to engage others in their school by sharing the benefits realised through personal application.
The Control schools also identified specific barriers not reported by the Quality schools, these included: *Processes not being followed, Clear timelines, Role clarity* and *Lack of recognition between equity and equality.* This suggests that the *Quality Improvement* approach helps schools to overcome or minimise the impact of these barriers.

It appears that schools that participated in the *Quality in Schools* program have developed a different mindset with respect to improvement than other schools. Participating in the *Quality in Schools* program has brought about a change in their beliefs (paradigms) and focus regarding what is important to effect school improvement.

2. **The *Quality in Schools* program was resilient to challenges usually associated with the failure or stalling of change interventions**

Four challenges were identified that might be expected to impact upon a school’s attempt to introduce the *Quality Improvement* approach. The challenges investigated included; changes to school leadership, variation in the size of the school, turnover in the number of trained staff, and sustainability over time.

For this part of the study, data collected from participating Quality schools were used to evaluate the impact of specific challenges on the improvement efforts of the school. It was assumed that the challenges selected would have a negative impact upon deployment of the *Quality Improvement* approach.

Analysis revealed that consistency with respect to senior leadership of the school impacted upon the deployment of the approach. A change to leadership negatively affected embedding the approach across the school.

The other factors tested, variation in the size of the school, changes to the number of staff trained in the *Quality Improvement* approach remaining at the school and the number of years passed since training was completed, did not appear to have a significant effect on the depth of application of the *Quality Improvement* approach.

This suggests a high degree of sustainability of the approach.
This is perhaps particularly impressive because of the length of time between completion of the Quality in Schools’ training and the data collection. This period ranged from four to eight years for the schools in the sample.

The consistency of the Quality Improvement approach across these categories demonstrates constancy of purpose and commitment by the schools involved, with respect to application of the approach to affect continuous school improvement. Overall, the depth of deployment has remained strong in those schools that participated in the Quality in Schools program.

Discussion of the Research Findings: Future Application of the Research Methodology

This finding related to the possible future application of the methodology developed through the research for the purposes of evaluating other school-based change and improvement initiatives.

Findings

The findings (one and two) show:

Finding 1 - Benefit to Schools
Schools reported their experience of the self-assessment process as a positive and useful one. They said it provided opportunity, structure and a collaborative space for reflection to inform planning. Three of the schools used the session with all staff to inform the school’s strategic planning process.

A number of schools also commented on the accessible format of the instrument. They said that it provided a ‘vision of excellence’ or explicit detail as to what the approach or change entailed, and gave participants useful information regarding ‘what to do next’ to further improve their application of the approach.
Finding 2 - Accuracy of Self-reported Scores

However, a limitation was noted with respect to variation in the accuracy of the self-reported scores that would need to be addressed in adapting the methodology for future use in the evaluation of change initiatives.

It is felt that some of the schools may have exaggerated their scores due to one or more of the following influencing factors:

- limited understanding by of the true meaning behind each descriptor with respect to what the philosophy and methods look like in practice
- participant’s feeling threatened by the potential repercussions from school leadership if they reported a low score
- participant’s feeling too embarrassed to report a poor score in the presence of the researcher. On one site this was evidenced by observations of practice and the physical environment made by the facilitator during the data collection process that conflicted with the scores reported by participants.

It is believed that this potential flaw in the methodology could be improved sufficiently to overcome these shortcomings by requesting that proof or evidence either through documentation, verbal defence or demonstration by some other means, be provided to substantiate the score attributed by the participants.

Summary

In summary, the methodology developed to assess the deployment of the Quality Improvement approach could be adapted for use in assessing the success of other change strategies. It is suggested that improvement to the process for use of the instrument be made with respect to participant’s being required to provide evidence to substantiate their self-assessment.
Discussion of the Research Findings: the Literature Review

The Need to Improve School Education and the Current Approach to Improvement

The literature revealed an urgent need for the improvement of school education to prepare students for the new challenges presented by the 21st century and discussed the outdated nature of the present school system to meet the changing needs of our society (Friedman 2005, Fullan, Hill and Crevola 2006, Kennedy 2001, OECD 2007, Productivity Commission 2005).

State, Territory and Federal government strategy is united and focused in the call for school improvement, however, rather than a systemic approach, schools have been left to self-manage their attempts to improve performance, resulting in a fragmented and ad hoc approach to improvement (ACT DET 2004, DEST 2008, Masters 2007, NSW DET 2008b, NT DEET 2008, Queensland State Education 2007, SA DECS 2008, TAS DET 2006, VIC DEECD 2008, WA DET 2008).

Most schools engage with (or have imposed) a ‘dartboard approach’ to improvement as they choose at random from a multitude of programs and initiatives, all claiming to bring about improvement. As a result, schools are suffering from change fatigue as they experience wave after wave of the latest ‘fad’, persisting with few to realise any long term positive effect (Donnelly 2005, Middleton and Hill 1995, NSW Public Education Inquiry 2005). The literature contained little documented evidence as to the impact of these initiatives in bringing about school improvement, particularly studies that examine the improved performance of schools compared to a Control group (quasi-experimental) and the effect over the longer term (longitudinal).
The literature also highlighted the lack of a systemic approach to improvement. Most school improvement initiatives currently ‘tamper’ with the tail ends of the system rather than improving the system for all learners. Many programs are tailored to the ‘gifted and talented students’ or those categorised as ‘students with learning difficulties’ (Masters 2007).

The lack of impact of this ad hoc approach is apparent on examination of the Victorian and national data reported over the last decade - the performance data shows no evidence of sustained improvement in any area of school or student endeavour, despite the investment of millions of dollars annually to improve the system (DEST 2007b, Fullan, Hill and Crevola 2006, Masters 2007, MCEETYA 2007, SSCEWRE 2007, VIC DET 1996-2006).

This is further evidenced by other data in the literature relating to:

- decreasing student engagement and retention (DEST 2007b, Hill and Russell in Bosker et al. 1999)
- waning parent satisfaction (DEST 2007c), leading to an increasing number of students moving to the private schooling system (Bone 1996, Bonner and Caro 2007)

This supports the need to move to a more systemic approach to school improvement, one that is guided by a shared and clear objective, and supported by sound and proven principles and methods.
The findings of this research with respect to the broad applicability of the *Quality Improvement* approach, and the improvement achieved by schools participating in this program of training, suggest that the *Quality Improvement* approach offers such a way forward.

**Developments in Learning-related Research**


The strategies and methods described by the *Quality Improvement* approach appear well-aligned with the needs of the brain with respect to learning (QLA 2007b). This is supported by the findings of this research where schools deploying the approach achieved a higher rate of improvement in student learning outcomes than that achieved by *Like* schools.

**A Proven Approach in Industry and Schools**

Although the literature revealed a very limited number of evaluative studies with respect to the longitudinal implementation of the *Quality Improvement* approach in school education, the findings from studies conducted in Alaska (RISC 2005), and the data reported by the Leander District in Texas (LISD 2007), align well with the findings of this research, with respect to the improved performance shown by those schools applying the approach.
The findings of this study also support the findings reported in the literature associated with performance and productivity and the implementation of the approach in industry.
Chapter Six

Conclusions and Implications

Introduction

The purpose of this chapter is to:

- present the conclusions drawn from findings of the research
- discuss the implications and the proposed contribution made
- describe the limitations of the study
- make recommendations based on the research findings.

Conclusions with Respect to the Research Findings

This study set out to determine whether a Quality Improvement business model proven to be effective in the improvement of performance and productivity in industry, can be successfully applied to a school setting and lead to improved performance.

The Quality in Schools program was an initiative of the Australian Quality Council in partnership with the Victorian Department of Education and Training. The intervention was designed to introduce the Quality Improvement approach to schools by supporting them through a process of learning and adapting and adopting the thinking, strategies and tools.
The two-year program provided school teacher and administrator training and support to 138 Victorian primary, secondary and special schools between 1997 and 2004.

The objective of this study was to assess the impact of the program and examine the relationship between deployment of the Quality Improvement approach and school performance and improvement.

The research questions, hypotheses and the variables pertaining to the study are illustrated in Figure 6.1.

![Figure 6.1 Relationships between the Research Variables and the Research Hypotheses](image-url)
Research Question/Hypothesis 1: Deployment of Quality Improvement Quality versus Control Schools

“Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than schools that did not participate in the program?”

The following conclusions were made based on the findings achieved:

1. The level of deployment of the Quality Improvement approach was greater in those schools that had participated in the Quality in Schools program than those that did not (statistical significance established).

2. The schools that participated in the Quality in Schools program showed greater strengths in the areas of data, planning, variation, stakeholders, people, leadership and change (statistical significance established).

Research Question/Hypothesis 2: Impact of Deployment of Quality Improvement on School Performance

“How does adopting the Quality Improvement approach impact upon school performance?”

The following conclusions were made based on the findings achieved:

1. Deployment of the Quality Improvement approach positively correlates to increased staff satisfaction (statistical significance established).

2. Greater deployment of the Quality Improvement approach positively correlates to increased performance in primary school student reading, writing and number (statistical significance established).

3. No relationship was identified between deployment of the Quality Improvement approach and parent satisfaction.

4. Deployment of the Quality Improvement approach is sustainable over time (positive correlations sustained over time).
Research Question/Hypothesis 3: Impact of the Quality in Schools Program on School Improvement

“Do the schools that participated in the Quality in Schools program show greater improvement than schools that did not participate in the program?”

The following conclusions were made based on the findings achieved:

1. The observed rate of improvement was greater in Quality schools compared to Control schools, however this difference was not statistically significant.

2. The observed rate of improvement was greater in the Quality schools compared to Like Group School State averages, however this difference was not statistically significant.

3. The combined student learning outcomes showed a statistically significant greater rate of improvement of in the Quality schools when compared to Like Group School State averages.

Research Question/Hypothesis 4: The Challenge of School Improvement

“What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the Quality in Schools program as for the schools that did not?”

1. Quality and Control schools experience different challenges and think differently about improvement. Quality schools reported that resources and time were the main barriers to improvement success. The Control schools looked to blame individuals (student ability and staff resistance to change) as major inhibiting factors.

2. The Quality in Schools program was resilient to challenges usually associated with the failure or stalling of change interventions, specifically changes in trained staff, school size and number of years passing after completion of training.
Future Application of the Research Methodology

1. The methodology can be readily adapted to assess the impact of other improvement interventions.

2. The process adds value – through reflection and informing the planning process for participating schools.

Conclusion Summary

The conclusions drawn from the study are summarised in Table 6.1.

Implications of the Research

The implications derived from the research findings, and discussed in this section, reference the specific aims of the study as follows:

1. To determine whether the Quality Improvement business model is relevant, transferable and of use in affecting school and classroom improvement.

2. To identify the major challenges experienced by schools in affecting improvement to inform the design and deployment of future school change initiatives and the improvement of education systems.

3. To develop an evaluative instrument that might be applied to the assessment of the impact of other school improvement initiatives.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have the schools that participated in the Quality in Schools program deployed the Quality Improvement approach to a greater degree than schools that did not participate in the program?</td>
<td><strong>Hypothesis 1</strong> - The schools that participated in the Quality in Schools program have deployed the Quality Improvement approach to a greater degree than the Control schools that did not participate in the program.</td>
<td>There was greater deployment of the Quality Improvement approach in Quality schools compared to Control schools. The Quality in Schools program has contributed to the greater deployment observed. Quality schools were continuing to apply the Quality Improvement theory, methods and tools four to eight years after completion of the Quality in Schools training. They maintain a high level of commitment to the approach, providing evidence that the approach is sustainable over time.</td>
</tr>
</tbody>
</table>
| 2. How does adopting the Quality Improvement approach impact upon school performance? | **Hypothesis 2** - The greater the depth of application of the Quality Improvement approach by a school; the greater the school’s performance measured in terms of:  
  • student achievement (at one point in time)  
  • staff satisfaction (at one point in time)  
  • parent satisfaction (at one point in time). | There was a significant, but weak, relationship between depth of deployment and performance in primary student learning in the areas of reading, writing and number based on teacher assessment of learning indicators.  
There was significant moderate positive correlation between depth of deployment and performance with respect to staff satisfaction.  
There was no apparent relationship between depth of deployment and performance with respect to parent satisfaction. |
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
<th>Finding</th>
</tr>
</thead>
</table>
| 3. Do the schools that participated in the *Quality in Schools* program show greater improvement than schools that did not participate in the program? | **Hypothesis 3** - The rate of school improvement of the schools that participated in the *Quality in Schools* program is greater than the Control schools that did not participate in the program measured in terms of:  
  - improvement in student achievement (over time)  
  - improvement in staff satisfaction (over time)  
  - improvement in parent satisfaction (over time). | There were no statistically significant differences detected in the rate of improvement between Quality and Control schools in student achievement, staff satisfaction or parent satisfaction. However, Quality schools demonstrated consistently higher rates of improvement across all areas with the exception of staff satisfaction, when means were compared for the three year period studied with those of the Control group of schools. Statistically significant differences were detected in the rate of improvement between Quality and Like School State averages for student achievement when the key performance indicators for learning outcomes were combined. Quality schools demonstrated consistently higher rates of improvement across all areas when means were compared with Like Schools over the three years studied. |
| 4. What are the major challenges experienced by schools in affecting improvement? Are these challenges the same for schools that participated in the *Quality in Schools* program as for the schools that did not? | **Hypothesis 4** - The challenges to school improvement experienced by schools that participated in the *Quality in Schools* program are different to those experienced by Control schools that did not participate in the program. | Quality and Control schools have noticeably different perspectives on their vision of what constitutes an excellent school and the drivers and barriers to school improvement.                                                                                                                                                        |

**Table 6.1 Summary of the Research Questions, Hypotheses and Findings**
Implication 1: The Quality Improvement Business Model is Relevant, Transferable and Improves School Performance

There has been extensive research undertaken as to the impact of the Quality Improvement approach (in its various guises) in industry - most reporting significant improvement in organisational performance and productivity. This study set out to determine whether similar benefits have been realised by schools applying the approach. The findings of the study show that the Quality Improvement business model has relevance and is transferable to the school setting.

Most importantly, schools can and do, adopt and deploy the thinking, strategies and methods associated with the approach. This is evidenced by a greater depth of deployment by schools that participated in the Quality in Schools program when compared to other schools.

The findings provide evidence of the effectiveness of the program in increasing the understanding and application of Quality Improvement, and that deployment of the Quality Improvement approach leads to improved performance of schools in the areas of student learning, staff morale and parent satisfaction.

Implication 2: Informing Future Change Initiatives - Challenges to School Improvement

The research has identified two major challenges associated with school improvement. The first is the implied urgent need for improvement, the second, the apparent transformational nature of the change required.

The findings of the study show that the Quality Improvement philosophy can address both of these challenges.
The Urgent Need for School Improvement

“Education is no longer an understanding of our younger years applied to our adult years. Learning must be lifelong. Education no longer consists of a single set of lessons that endure over several generations. The lessons change continuously over our lifetime” (Scholtes 1998).

The literature review in Chapter Two described in detail the urgent need for improvement of Australian school education. This argument is based on the changing needs of students to meet the increasing demands of a global society, a growing understanding of how learning takes place and evidence to suggest the deteriorating performance of the current system.

The indicators of our failing school education system include:

- poor student engagement and retention
- declining standards and increasing variation in student achievement compared to other countries
- the number of students going on to tertiary education
- growing parent dissatisfaction
- declining educator morale and teacher numbers.

There is a growing awareness that the system needs to improve. However, to date both State and Federal governments have failed to establish an approach that can bring about the desired improvement in a systemic and cost effective way. Currently further initiatives are underway to introduce outdated and ineffective methods in an attempt to bring about school improvement, such as merit pay for teachers and the public ranking of schools (DEST 2008, The Australian 2008). These methods have been shown repeatedly in industry to not deliver the long term sustainable improvement required (Deming 1994, Scholtes 1998, Kohn 1992, Herzberg 1987.). (Such methods also imply that educators are deliberately withholding their best efforts to improve, just waiting to be paid more or to be subjected to competition to take action!)
This study has shown that the Quality Improvement methodology can and does bring about improved school performance. It can be applied, and is relevant to, all levels of the school education system including:

- the classroom
- school leadership and administration
- school regional or district offices
- central education departments.

It can provide focus, constancy and consistency across the education system – a framework for everyone involved in the improvement of the system.

**Transforming Our Schools**

The following are general observations made as a result of the findings and during the process of the research, and through reports from educators and administrators as to the challenges experienced with their improvement efforts.

It is suggested that these observations provide valuable information for the design and deployment of future school improvement initiatives.

**Committing to Systemic Change: There is no ‘Quick Fix’**

System-wide change is required to effect the improvement needed in school education. The competing priorities of schools means that improvement needs to be addressed at a strategic level, it requires commitment to, and ownership of, an agreed theory of improvement, constancy of purpose and focus, and the need for ongoing measurement so that progress can be effectively monitored. This needs to take place over the long term – there is no quick fix.

Adopting a new approach within a school usually requires the development of new skills and different ways of thinking about everyday activities. This takes considerable time and focused effort. There needs to be significant and ongoing commitment by school and departmental leadership to ensure the following is achieved (Deming 1994, QLA 2007a, Senge 1994, 2000):
• **constancy of purpose:** where schools have achieved significant and ongoing improvement in student learning and the quality of school life, a constancy of purpose is clearly evident. These schools have a clear focus on performance improvement, a shared vision of excellence, and the use of structured methods to achieve it. They are unwavering in their commitment to this. Schools are subject to many competing priorities from numerous stakeholders, legislative requirements, imposed structural changes, and departmental initiatives. This usually leads to rapid and constant changes in emphasis, a loss of focus and change fatigue. The degree and demonstration of system-wide commitment to improvement can make it easier or harder for schools to retain constancy of purpose and a focus on improvement.

• **ongoing support, training and collaboration to facilitate learning across the organisation:** students, teachers and administrators need to be supported in the development of a deep understanding of the improvement philosophy, and the application of the improvement methods. One-off professional development ‘events’ can stimulate growth, dialogue and excitement, but rarely lead to sustained changes to practice. Ongoing support is required. The *Quality in Schools* program provided support over a two-year period. This included professional development sessions with a number of schools and site-specific support to teachers and the leadership team to address the individual challenges and issues associated with learning and application.

Also, organisations that achieve sustained and continuous improvement have been shown to structure regular opportunities for people to share and learn from one another.

• **alignment of school systems and processes:** organisational systems and processes usually need to be reviewed and adapted to align, focus and support the improvement approach.
• **role modeling by leadership**: cultural change requires ongoing support and commitment by school leadership. School leaders must be seen to actively participate in learning and personally lead the application of what is learned, by example. This includes actively promoting the importance of the initiative at every opportunity and prioritising the allocation of time and resources accordingly. The people working in the system look to leaders of the school and department to role model the change they are expecting to see in others.

**Schools need more than Statements of Desired Outcomes to Improve**

School excellence research, reports in the literature and governmental strategic documents tend to focus upon descriptions of WHAT excellence looks like. Schools participating in the study could quickly and clearly identify the characteristics of an excellent school, aligning well with anything reported in the literature (Figure 6.2). It therefore appears that the message as to the outcomes that schools need to achieve has been well promoted and is understood. It also appears that what is **not understood** is HOW administrators and educators might go about creating these schools of excellence. They are not equipped with the strategies and methods necessary to develop shared vision and goals, work effectively, efficiently and collaboratively in teams, to lead improvement by engaging staff and students etc.

“*Best efforts and hard work, not guided by knowledge, only dig deeper the pit we are in*” (Deming 1994).

The **Quality Improvement** approach provides the necessary theory, and practical (HOW TO) tools and methods to support the improvement efforts of schools and to achieve the outcomes desired.

**Adopting a Theory of Improvement - not just program after program**

“*Many ‘battle weary’ teachers, at the sight of a new initiative, have learned to ‘keep their heads down and wait for it to go away’. With years of experience, they have learned that this is a strategy that usually works because so many initiatives do just go away*” (QLA 2008).
• Teamwork and collaboration, cooperation. A cohesive staff. Sharing good practice
• Leadership
• Engaged, motivated and enthusiastic staff
• Good communication, consultation and listening
• Community involvement and support
• Engaged and motivated students
• A focus on improvement. A continuous improvement philosophy
• All students achieving. The best outcomes for students. Value added learning
• A supportive environment and culture
• High staff morale, fun, joy in work
• Staff professionalism and experience, flexibility, dedication and commitment
• A focus on students, student centred
• Resource rich
• Mutual respect
• Relationships
• Positive, challenging learning environment
• High retention (staff and students)
• Data driven
• Innovation and creativity

Figure 6.2  Participant Identified Characteristics of an Excellent School

There are numerous programs and methods for schools to choose from, with new ones emerging every day. Schools appear to dive from one to the next in the absence of a guiding strategy or theory of improvement allowing them to put into place a structured approach to assessing, deploying and evaluating the ‘next best thing’.

The Quality Improvement approach is a strategy complete with theory, methods and tools that provides a consistent framework for all improvement effort undertaken at any level within the school (Langford 2008, QLA 2005).
“What gets Measured gets Done…”

The use of data and understanding of system and process variation to inform improvement is not well understood or applied by the education system.

Measures of success relating to improvement need to be identified, incorporated into strategic and operational plans, and progress monitored regularly to demonstrate where improvement is achieved. This further prioritises and embeds the approach, and allows for the ongoing recognition and celebration of success.

The Drivers of School Improvement

The qualitative data collected to determine the challenges experienced by schools with respect to bringing about school improvement reveal important information for the design and deployment of future change initiatives.

The drivers of school improvement identified by all schools were:

- **Data**
- **Leadership**
- **Willingness to improve/attitude to change**

The Quality schools showed an increased capacity for, and greater evidence of activity (through deployment self-assessment scores) in these areas. Future interventions need to focus on providing strategies and methods that focus support for schools in these three areas.

The Barriers to School Improvement

The major barriers to school improvement identified by the Quality schools were time and budget. The design and deployment of future change initiatives need to be cognisant of the need to provide adequate time and funding for successful deployment.

The major barriers to school improvement identified by the Control schools were associated with (blamed on) the people in the organisation *low expectations of students* and *resistance to change*. 
There is much data reported in the literature demonstrating that low teacher expectation has a negative impact on the learning outcomes of students. This needs to be addressed in future interventions with schools if this is a belief shared across the broader school population (Hattie 2009, Jensen 1998, Langford and Cleary 1995, Marzano 2003, Stoll 2003).

The Quality Improvement approach emphasises the improvement of processes and systems to change behaviour and performance of people (effectively removing blame). The Quality in Schools process was designed to minimise resistance by avoiding the imposition of change and facilitating the involvement and input of all stakeholders of the system (Deming 1994, Scholtes 1998).

Several other barriers were identified by the Control schools and not the Quality schools, these included: Processes not being followed, Clear timelines, Role clarity and Lack of recognition between equity and equality. This would suggest that the Quality Improvement approach helps schools to overcome these barriers.

Sustaining Improvement

Additional information was collected from each participating school to assist with assessing the challenges usually associated with hindering or causing improvement efforts to fail. These included the size of the school, the number of years the approach had been deployed, the number of original members of the team that undertook the professional development remaining at the school and whether or not the incumbent of the role of senior leader of the school (i.e. the school principal) was the same person who undertook the professional development and consistently led the change within the organisation.

The commitment and consistency of leadership was shown to affect the level of deployment by schools. A change of leadership during a time of critical learning and cultural change has a negative impact. Future initiatives must ensure (as far as possible) consistency of leadership throughout the learning and adoption period.
The results of the study analyses showed that the other specific factors; school size, the number of year’s deployment and the number of team members remaining at the school did not significantly impact the deployment of the Quality Improvement approach for the schools tested. Common sense would dictate that these factors would not be favourable to maximising implementation. The design of future initiatives should take into consideration the implications of these changes to minimise their incidence and/or impact.

**Implication 3:**
**Use of the Research Methodology to Evaluate other School Improvement Initiatives**

During the 2005-2006 financial year $26 billion of Australian government funding was invested in primary and secondary education (MEETYCA 2006). Numerous State and Federal government documents describe the desired outcomes that this investment is to achieve. However, data available through the literature reveals that over the last decade, only incremental improvement has been realised, and there are few reports that directly assess the specific impact of the vast number of strategies and initiatives deployed annually.

One hundred and thirty-eight schools took part in the Quality in Schools program between 1997 and 2004, at a cost of more than $2 million to the Victorian State government. As with other initiatives, to date, there has been limited evaluation as to the impact of the program on school performance and improvement, and the return on the investment made.

It is suggested that the evaluation of existing and future school improvement strategies can be readily effected by adapting the methodology designed and deployed through this study.

The process involves using existing school performance data. This means there is no additional requirement placed on schools or the department to collect and process additional information.
The primary data collection instrument can be modified to reflect the vision of excellence (descriptors) the strategy is designed to achieve. This clarifies the intended outcomes to the user and describes the desired behaviours, activities and processes that need to be in place to evidence deployment of the approach. The statistical methods used are routine analyses that can be easily applied to test the relationships in question.

The implications of the findings discussed above reference the three aims of this research. A further implication associated with the study, with respect to developing a greater understanding of the school education system is also suggested.

**Implication 4:**
**The Need to Grow Our Understanding of the School Education System**

This study has highlighted an urgent need for more research to create a greater understanding of the performance of the Australian school education system and what can be done to effect the improvement required. The specific areas identified for future research are:

- assessing the impact of the *Quality Improvement* approach on school performance and improvement on a greater number of participating schools (and comparing them to Control schools) to determine whether the trends identified in this study are indicative of statistical significance in a bigger test sample

- analysing the performance and improvement data and methods of private schools compared to State Quality schools. Especially with respect to the ability of private schools to ‘value-add’ to the learning of their students. It is suggested that private schools attract a greater proportion of students with higher academic proficiency that leads to their better performance.

There are also reports of selective methods to attract and retain only those students who achieve required standards. This positively impacts upon the performance data, and therefore the reputation, of these schools.
• working over a longer term (i.e. more than two years) with a number of volunteer schools, supporting and funding their adoption of the Quality Improvement approach. The purpose of this extended intervention would be to further assess the level of support and professional development needed to achieve sustainable and ongoing improvement, and the appropriate period of time over which support should be made available.

• assessing the impact of other initiatives to evaluate their return on investment compared to the Quality in Schools program and the Quality Improvement approach.

Future work should also, if possible, address the limitations of this research. In particular, a more comprehensive data set should be used in terms of the variables used to assess performance and the number of schools included in the study. The accuracy of self-assessment data is also emphasised as one of the limitations discussed in the next section of this chapter.

Limitations of the Study

Limitation 1: School Performance Data

Data Availability

The study involved assessing deployment of the Quality Improvement approach in 2007 to 2008, however the performance measures used were from two to four years earlier (i.e. 2003-2005).

This was due to changes to departmental data collection instruments between 2001 and 2007. This meant that there was limited consistent information available to assess school performance and improvement over a longer term. The data used to assess school improvement over time was therefore restricted to the years 2003, 2004 and 2005.
School performance was assessed for the year 2005. This represented the most recent data set available for comparison to the primary data collected through the self-evaluation process in 2007-2008. This difference in time may have negatively affected the relationship found between deployment, performance and improvement.

Managing the Volume of Data

The study used Year 6 student data from the primary schools and Year 10 student data from the secondary colleges to assess the performance and improvement of the Quality and Control schools.

Only one analysis, examining the correlation between deployment of the Quality Improvement approach and performance, involved the use of data from Year prep through to Year 6 of the primary schools.

The decision to restrict the data to Year 6 and 10 for the majority of analyses was taken in order to reduce the total number of analyses necessary. There were twelve student year levels of data available for use.

Year 6 and 10 were selected because they represented data available at the most senior student level for each of the school (primary and secondary) types. This was based on the proposition that the more senior students would have had greater opportunity for exposure to the Quality Improvement methods as they had been at the school for a longer period of time.

For the parent and staff satisfaction measures, a single question relating to general satisfaction/morale respectively was selected from the set of questions comprising each of the surveys, again to restrict the number of analyses necessary.

Other data considered, but not used, included:

- student engagement – ‘attitudes to school’
- student retention (years 10 to 12 of secondary college)
- VCE and VCAL results for all subjects
- enrolments
- student and staff absence
- data relating to staff and parent opinion.

These additional data were not used for one or more of the following reasons:
- the data were not included in the School Level Report which contained all of the other performance and improvement data used for the study, and would therefore have required additional time and effort on the part of the school to provide (this was the case with the student engagement data)
- the data were not available for the 2003 to 2005 time period
- the data were considered less reflective of the overall performance and improvement efforts of the schools, and influenced to a greater extent by other environmental factors (e.g. as with the increasing or decreasing of enrolment numbers due to demographic changes, or staff satisfaction being more informative than staff absence).

The use of this additional information may have added further useful insights to the study.

**Limitation 2: Sample Size**

Due to the difficulty experienced with gaining agreement from schools to participate in the study, and the time commitment required to complete the self-assessment process with each school, only a small sample size was obtained (22 of a possible 138 Quality schools).

Each self-assessment required an average of two hours to complete. Travel to each of the schools also added significant financial cost and time. The Victorian Department of Education would not release school information without the permission of the school. The need to involve individual schools could therefore not be overcome.
The sample size has limited the study with respect to establishing statistical significance for some of the analyses conducted despite positive trends being demonstrated.

Qualitative data was available for only five of the Control schools. The status of the other sixteen Control schools with respect to their level of deployment of the Quality Improvement approach is unknown (only secondary performance data was available from these schools). A conclusive comparison could therefore not be achieved.

The schools were randomly selected but stratified proportionally according to school type. The ratio of primary to secondary schools across the state of Victoria is approximately 6:1 (i.e. of the 1,587 government schools in Victoria, there are 1,201 primary schools and 253 secondary schools (DEECD 2008)). The sample selected closely reflected this ratio, with 19 primary schools and three secondary colleges, a ratio of 6:1.

A mix of metropolitan and country schools was used. Five country schools and 17 metropolitan schools were included in the sample.

The Control sample was selected based on this same representative ratio with the schools matched according to like school group, number of student enrolments and, where possible, geography.

The small size of the sample somewhat limits the confidence with which the results of the study can be generalised to the research population.

Statistical significance was achieved however for the following, despite the small sample size:

1. The depth of deployment of the Quality Improvement approach was greater in schools that had participated in the Quality in Schools program than the Control group of schools.

2. Positive correlation between the depth of deployment of the Quality Improvement approach and staff satisfaction.
3. Positive correlation between the depth of deployment of the Quality Improvement approach and increases in performance in primary school student reading, writing and number (mathematics).

4. Quality schools achieved a greater rate of improvement than for Like school averages with respect to combined learning outcome measures.

**Limitation 3: Evidence of Deployment**

A limitation as to the accuracy of the study was noted with respect to the self-reported scores. It is felt that the some schools may have exaggerated their scores due to one or more of the following influencing factors:

- participants reporting in ignorance of the true meaning behind each descriptor i.e. 'not knowing what they don’t know’ about what each aspect of the philosophy and methods would look like in practice
- participants feeling threatened by repercussions from the school leadership when reporting a low score
- participants feeling embarrassed in the presence of the researcher when reporting a low score reflecting inadequate performance of the school.

This was noted by researcher observations of conflicting practice and evidence in the physical environment and the scores reported by participants.

It is believed that this potential flaw in the methodology could be improved sufficiently to overcome these shortcomings by requesting that proof or evidence either through documentation, defending verbally or demonstration by some other means, be provided to substantiate the score attributed by the participants.

Also where the self-assessment was completed by only one person, rather than a team or whole staff, the result may be less reliable as it is based on the perceptions of one individual. This was the case for 5 of the 22 Quality schools that completed the self-assessment, and four of the six Control schools.
Limitation 4: The Number of Variables

The variables selected to provide the critical information required for the study were limited to two dependent, and one independent variable. They were:

**Dependent Variables** – school performance and school improvement

**Independent Variable** – depth of deployment of the *Quality Improvement* approach.

The model detailed in Figure 6.1 reflects the critical relationships between the variables used as the basis of the study.

Criteria considered in selecting the variables included; the nature of the relationships between the variables selected, sample size, cost, availability, reliability, and meaning. It is possible that other variables could have provided a better understanding.

However, despite the limitations of this research discussed above, it is felt that the study has made a substantial contribution with regard to the five areas discussed in the next section.
Contribution of the Research

The following is a discussion of the study findings with respect to emergent/emerging evidence to confirm that the desired contributions of the research (introduced in Chapter One) have been realised:

Contribution 1: Adding Value for Participating Schools

“To provide participant schools with valuable insights as to how they might sustain and extend their improvement efforts. It is hoped that the data-gathering process will assist schools in identifying areas where further opportunity for improvement exists, and provide ideas, focus and leverage for school and classroom improvement action.”

The schools completing the self-assessment all reacted positively to the process and the instrument used for data collection. Three schools used the process as a planning session with all staff for the purpose of reflecting on progress and identifying next steps to build commitment to, and progress, their improvement efforts.

For example, as a result of the self-assessment process, one of the schools identified and prioritised the need to document policies, processes and supporting documents. The school has embarked on a school wide initiative to progress this next stage in their adoption of the approach.

Other positive feedback reinforced that the process was viewed as a valuable and worthwhile investment of the school’s time and effort.
Contribution 2: Relevance of the Quality Improvement approach and the Quality in Schools Program

“To demonstrate the relevance and effectiveness of the Quality Improvement approach and the Quality in Schools program in improving the performance of schools and classrooms.”

“Organisations that consistently demonstrate continuous improvement know that the workers on the shop floor need to be skilled to pay attention to quality (meeting goals), collect, interpret and take action on performance data and work in teams to improve processes. All this requires the active support of management to listen, engage in dialogue (to truly understand each other’s perspectives), identify barriers to quality and work to improve systems and processes that will remove or mitigate the effects of the barriers.

In a classroom, the education of the child is the product and the learners need to pay attention to quality, which requires explicit criteria and goals that are understood and owned by the learner, to collect and interpret data on their learning and the extent to which quality criteria and goals are being achieved, to take appropriate action on these data, and to work with their colleagues and supervisors (the teachers) to improve the learning processes.

Students need to learn how to improve their own learning processes (be their own teachers), and the teacher has a vital role to play in equipping the students with the skills and resources to improve the situation and achieve their goals. All this requires a safe environment where active, passionate and engaging people can learn together.

Quality Improvement not only provides a philosophy, but also methods to support data-driven collaboration and teamwork focussed on improvement…” (Michael King personal correspondence 2009).
As discussed earlier in this chapter, the research has shown that as the depth of deployment of the Quality Improvement approach increases, so does:

- the performance in primary student learning outcomes in the areas of reading, writing and number (mathematics)
- improvement of employee morale (staff satisfaction) within the school.

The quantitative evidence obtained through the research also shows that the Quality schools improved their performance with respect to learning achievement, staff and parent satisfaction to a greater extent than the sample of Control and State-wide population of Like schools over the period 2003 to 2005.

This improvement was noted at a time when national school learning data also showed little sign of improvement (Figures 6.3 to 6.5 illustrate national achievement levels at this time) (DEST 2007b).

This would suggest that the Quality Improvement approach and the Quality in Schools program have had a positive effect on improving school performance.

Figure 6.3 Student’s Achieving the National Benchmark for Reading (2001-5)
Figure 6.4  Student’s Achieving the National Benchmark for Writing (2001-2005)

Figure 6.5  Student’s Achieving the National Benchmark for Numeracy (2001-2005)
In Chapter One, Jenlink’s (1996 p5) contrasting of the essential characteristics of schools of the future with the present-day school was introduced, highlighting the magnitude of the change required in education (Figure 6.6). The results obtained through this study demonstrate that the Quality Improvement approach derived from industry and introduced to schools through the Quality in Schools program is relevant and effective in bringing about the improvement required within the school education system.

**Contribution 4: Informing the Design of Future School Change Interventions**

“To inform the design and deployment of future improvement initiatives by schools and education departments, as well as those organisations and individuals responsible for facilitating and supporting change within the school education system.”

It is suggested that the apparent success of the Quality in Schools program demonstrated by this study shows that it is possible to affect sustainable cultural change delivering improved school outcomes. This research has provided a new way of thinking about, generating and measuring school improvement.

Lessons from the design and deployment of the program and its evaluation can inform future school change interventions in the following ways:

- the Quality in Schools process emphasises the importance of a longitudinal approach to the training and support of schools through cultural change over the longer term, rather than one-off event-based training. This includes professional development and specific on-site support

- building the capacity of a consistent team of volunteers, that must include the (consistent) senior leader of the school. The team approach is aimed at building a critical mass of knowledge within the school. The team also provide essential support to one another through the learning process. Embedding the approach throughout the school takes place by ‘osmosis’ as the experience of the team grows by applying the practices to their areas of responsibility and then gradually informing the efforts of others in the school.
<table>
<thead>
<tr>
<th>20th Century Schools</th>
<th>21st Century Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory model</td>
<td>Learning community model</td>
</tr>
<tr>
<td>Learn WHAT to learn</td>
<td>Learn HOW to learn</td>
</tr>
<tr>
<td>Teaching as telling. Information dissemination by the teacher</td>
<td>Teaching as facilitating learning. Socially constructed knowledge by students and teachers</td>
</tr>
<tr>
<td>Closed boundaries for learning</td>
<td>Open boundaries for learning</td>
</tr>
<tr>
<td>Individualism</td>
<td>Collectivism and community</td>
</tr>
<tr>
<td>The teacher poses problems, and defines the learning context</td>
<td>Students collaborate with peers and teachers to pose problems. There is co-responsibility for creating the learning context</td>
</tr>
<tr>
<td>Convergent problem solving - one best way</td>
<td>Divergent and convergent problem solving</td>
</tr>
<tr>
<td>Competitive learning environment, win-lose</td>
<td>Cooperative and collaborative learning environment, win-win</td>
</tr>
<tr>
<td>Parents are external to the formal learning relationship and process</td>
<td>Parents as learning team members</td>
</tr>
</tbody>
</table>

**Figure 6.6    Contrasting Present-day Schools with Those of the Future**

This moves away from traditional professional development where one or two teachers attend a day-long training session and attempt to share what they have learned with staff in a ‘train-the-trainer’ approach during an hour-long staff meeting presentation.

- the importance of providing schools with practical methods and strategies to help them achieve the improvements sought, not just a philosophy or detail as to the outcomes desired (schools are not deliberately withholding their best efforts to improve!). The methods and strategies of *Quality Improvement* can be used by all stakeholders across the education system to bring about improvement in their areas of responsibility; students from their prep to Year 12, teachers in primary and secondary classrooms, the office staff of the school, school leaders, and regional officers through to the Secretary of Education…
the positioning of continuous improvement as a long term strategy, a key focus and priority of the school, not another fad-like program that will come and go. Seeing continuous improvement throughout the school as an ongoing necessity, an essential part of everyone’s job, not an option – “How do I know I am doing a better job (of teaching, of learning, of leading the school) this year than I did last year?”, and having systems for measuring this improvement.

**Contribution 5:**
**Future Application of the Methodology**

“To develop a methodology that is applicable for the review and evaluation of other initiatives used by schools and education departments.”

The evaluation of the impact of school improvement interventions need not be a complex exercise. This study has demonstrated the development and use of an effective methodology for this purpose that can be easily adapted for use to measure the effect of other school improvement approaches. The methodology is also valuable in that it provides information to the school and an ongoing opportunity for the stakeholders of the school to reflect on progress and to inform planning.

Another strength of the methodology is that it uses existing school performance data.

The primary data collection instrument (rubric) can be easily modified to clarify and communicate the desired outcomes in terms of the behaviours and activities (descriptors) the change strategy is designed to achieve. It provides comprehensive information to participants to assist with learning and ensuring greater clarity by the change managers.

The qualitative data obtained through open ended questions are readily analysed, and the statistical methods used for the quantitative data are routine analyses that can be easily applied to test the relationships in question.
Contribution 6: Building Relationships between Education and Industry

“To demonstrate the relevance of business models to educational improvement, showing just cause for building stronger relationships between industry and education for the purpose of shared learning.”

Schools have rarely looked to industry, indeed, seldom looked beyond the school education system, for theory or practice relating to improvement. This study has established the relevance of a business model to school education, suggesting that other applications in industry may inform school improvement. Indeed, findings from applying change processes to schools may inform industry too! It makes sense for industry and schools to forge stronger relationships in order to share a language and successful processes for improvement.

Not only would this lead to greater performance in both sectors of our community, but will provide schools with a greater understanding of the skills and capacities needed by industry and equip students with the know-how to make a greater contribution in their future employment.

Recommendations

The recommendations made as result of the research are:

Recommendation 1: Systemic Reform

That government’s recognise the negative trends and their implications for the future of Australian school education and investigate and deploy effective methods for the urgent systemic and systematic improvement of this critical aspect of our infrastructure.
The current strategies of the federal government including ranking the performance of schools and performance based pay for teachers have been shown repeatedly in industry not to be effective (Herzberg 1987, Kohn 1999, Scholtes 1998). (The supply of a computer for each student is necessary but not sufficient to bring about the transformation needed!)

**Recommendation 2:**
**Ongoing Strategy Evaluation**

That all initiatives be evaluated to determine the return on investment. Also, that the *Quality in Schools* program be benchmarked against other initiatives to determine how the return on investment compares.

**Recommendation 3:**
**Reinstating the Quality in Schools Program**

That based on the outcomes of this study, the outcomes determined and the trends indicated, the *Quality in Schools* program be reinstated and extended to include schools from other states. That adequate funding and time (the major barriers to improvement identified by participating schools) be provided for these schools to participate.

**Recommendation 4:**
**Extending the Study**

That the Victorian Department of Education complete the evaluation of the impact of the Quality Improvement approach and *Quality in Schools* program, by utilising the data available to them for a larger sample of the participating school population. Ideally the analysis could be extended to include all participating Victorian schools.
A broader evaluation of the impact of the Quality Improvement approach and Quality in Schools program could also be completed using a wider range of performance and improvement indicators. These could include:

- all year levels of student learning outcomes for reading, writing and number across primary and secondary school
- student engagement
- student retention (years 10 to 12 of secondary college)
- VCE and VCAL results for all subjects
- the full range of staff and parent satisfaction parameters
- enrolments
- data from a greater number of years.

**Recommendation 6: Applying the Research Methodology**

That the self-assessment instrument developed for the collection of the primary data for the research be adapted for use in the evaluation of the impact of other school strategies.

**Recommendation 7: Ongoing Support for Quality Schools**

That the schools involved in the Quality in Schools program be offered ongoing support and professional development to allow them to extend and deepen their application and build upon the successes identified through this research.

**Recommendation 8: Informing Future Change Interventions**

That the special qualities of the Quality in Schools program (e.g. longitudinal training and support, team approach, the provision of practical methods and strategies) be used to inform the design and deployment of future school improvement interventions.
**Recommendation 9: Evaluating Public versus Private Schooling**

That a comparative study of the *Quality Improvement* deployment and performance of private and public Australian schools be undertaken to evaluate the return on investment and to inform public and government spending.

**Recommendation 10: Ongoing Dialogue between Industry and Education**

That conversations providing for the sharing of improvement approaches between industry and schools be fostered and limited to those that demonstrate significant improvement.

**Conclusion**

The research process involved interaction with a sample of 22 schools that had participated in the *Quality in Schools* program between 1997 and 2004. It involved evaluating the depth of deployment achieved by each of the schools, and analysis of the improvement realised against key performance indicators relating to student learning outcomes and staff and parent satisfaction. The results for the sample were compared to those of a Control group of a similar number of matched schools, and a broader population of *Like Schools* that were not participants of the program.

The findings of the study strongly suggest that the *Quality Improvement* approach has a lasting positive effect on school improvement.

It was found that the Quality schools had deployed the *Quality Improvement* approach to a greater extent than the Control schools, showing significantly greater strengths in the areas of data, planning, variation, stakeholders, people, leadership and change.
Deployment of the *Quality Improvement* approach was shown to be positively significantly correlated with increased staff satisfaction and increased performance in primary school student reading, writing and number.

Also, the Quality schools exhibited greater improvement than the Control schools and Like school averages in several key areas including, staff satisfaction and student learning outcomes for reading, writing and number. These findings were significant in the case of combined Student Learning Outcome measures.

The study also revealed that the Quality schools had achieved a change in mindset with respect to how they think about and approach school improvement.

A further important finding of the research was the apparent resilience of the *Quality Improvement* approach to changes to the number of trained staff, the size of the school, and the passing of time. The approach appears sustainable over the longer term.

A major implication and contribution of the study relates to the effectiveness and relevance of the application of a business model in achieving the urgent, systematic and systemic school transformation required.

The *Quality Improvement* model that has been used over many decades to improve performance and productivity in industry; has been shown to be relevant and effective in assisting Australian schools with their improvement efforts, delivering the outcomes they seek.

The findings also highlight important design and deployment considerations for future school reform initiatives. These include the need for long-term support for schools through the learning process, the team-based training of volunteers, and effective value-adding methodology to measure progress and inform planning for improvement in an ongoing way.

A further major contribution is the development of a self-assessment instrument and measurement methodology that is adaptable for evaluating the impact of other interventions. This self-assessment instrument served to reinforce the key messages of the *Quality in Schools* program, defining the behaviours and activities expected through deployment of the *Quality Improvement* approach.
This provided great insight for the learner participants and provided them with the means to recognise achievements and agree next steps to progress their collective improvement efforts.

The limitations of the study relate mainly to the practicalities of time and cost associated with the data collection process; the use of a limited amount of data to assess school performance and improvement, the use of a small sample which prevented statistical significance being established for some of the analyses performed, despite positive trends being demonstrated. Shortcomings were identified with the self-assessment methodology with suspected over-scoring by some participants.

The recommendations of the study include prioritising the systemic and systematic improvement of the Australian school education system, together with extending and completing this study to further establish statistical significance of the findings. Also, making the information generated through this research available to inform and evaluate existing and future school reform strategies.

We must act quickly to determine not only what works but what works best in terms of return on the efforts and time of our educators and students, and government funding. More studies are required to substantiate this research. If the findings of the research are confirmed then it is suggested that the Quality Improvement model replace the other (numerous) strategies being promoted by the various State and Federal governments across Australia. Every effort should be put into maximising the impact of the approach found to be most effective in bringing about the systemic improvement so urgently needed to ensure the future success and ongoing relevance of our public schools.
References


ACYS – Australian Clearinghouse for Youth Studies (2007). *Australian Youth Profile.*
http://www.acys.info


ASQ – American Society for Quality (2007a). Student Achievement Soars with the Use of Quality Strategies.


Conyers G. and Ewy R. (2004). *Charting Your Course – Lessons Learned During the Journey Toward Performance Excellence*. ASQ, Wisconsin, USA.


Erauler L. (2003). The Brain Compatible Classroom: Using What We Know About Learning to Improve Teaching. ASCD, Virginia, USA.


Jenkins. L. (2005). *Permission to Forget- And None Other Root Causes of America’s Frustration with Education.* American Society for Quality, Milwaukee, USA.


Meier D. (2002). *In Schools We Trust.* Beacon Press, Boston, USA.


http://www.russellconsultinginc.com/docs/PDF/BioMedical_PPT_PDF.pdf


http://www.saiglobal.com/ProfessionalServices/CoreProducts/SixSigma/Applying_Lean_Concepts_and_Principles.htm


http://www.skymark.com/resources/leaders/282rosby.asp


Study in Australia (2008). 


This page intentionally blank.
Appendix 1
Ethics Approval

From: Keith Wilkins [KWilkins@groupwise.swin.edu.au]
Sent: 23 October 2006 13:17
To: Denny Meyer; jane.kovacs@qla.com.au
Subject: SUHREC Project 0607/061 Ethics Appraisal

To: Dr Denny Meyer, FLSS
cc Ms Jane Kovacs

Dear Denny and Jane

SUHREC 0607/061 Facilitating Change in Australian Schools & Classrooms: Lessons from the Application of Business Improvement Concepts Dr D Meyer Ms Jane Kovacs
FLSS Project Proposed Duration: 23/10/2006 To 30/06/2008.

Ethics appraisal of the above project was carried out on behalf of Swinburne's Human Research Ethics Committee (SUHREC) by a SUHREC Subcommittee (SHESC4) on 20 October 2006, the outcome of which as follows.

Approved subject to the following clarified/revised to Chair's (or delegate') satisfaction:

1) A9: clarification on future use of data
   Information given on the ethics application related to study findings, but clarification/sufficient detail is needed as to future use of data collected/retained.

2) Group participation numbers
   Clarification is needed as to whether the intended group numbers are 4-6 (as per C1) or 6-10 participants (as per consent statement), the correct number needing to be on the consent statement.

3) D3: clarification on anticipated research outcomes
   Sufficiently brief detail is needed as to anticipated output/publication, eg, thesis, refereed/non-refereed journal or conference publication, etc.

4) Complaints info on consent statement
   The complaints clause on the consent information statement will need replacing/updating to read as follows: "If you have any concerns or complaints about the conduct of this project, please contact: Research Ethics Officer, Office of Research & Graduate Studies (H68), Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122. Tel (03) 9214 5218 or +61 3 9214 5218. Email: resethics@swin.edu.au"
5) Evidence of authority to involve SA Govt Schools

A photocopy of the letter of authority will need to be sent to my office for noting and inclusion in the records. (Only evidence of Victorian Government Schools authority was included in the ethics application.)

To enable further appraisal and on-going ethics clearance (if warranted), would you please respond to the above point by point, attaching any required revised documentation/instruments as applicable. Your response can be sent electronically in direct reply to this email.

Unless otherwise specified, a full revised ethics application is not required and should not be submitted. Please note that human research activity cannot commence until formal written approval has been communicated.

Please contact me if you have any queries about the ethical review undertaken. The SUHREC project number should be cited in communication.

Yours sincerely

Keith Wilkins
Secretary, SHESC4

**********************************
Keith Wilkins
Research Ethics Officer
Office of Research and Graduate Studies (Mail H68) Swinburne University of Technology
P O Box 218 HAWTHORN VIC 3122
Tel: 9214 5218

Education is only the beginning.
Let’s get on with it.

Swinburne University of Technology
CRICOS Provider Code: 00111D

NOTICE
This e-mail and any attachments are confidential and intended only for the use of the addressee. They may contain information that is privileged or protected by copyright. If you are not the intended recipient, any dissemination, distribution, printing, copying or use is strictly prohibited. The University does not warrant that this e-mail and any attachments are secure and there is also a risk that it may be corrupted in transmission. It is your responsibility to check any attachments for viruses or defects before opening them. If you have received this transmission in error, please contact us on +61 3 9214 8000 and delete it immediately from your system. We do not accept liability in connection with computer virus, data corruption, delay, interruption, unauthorised access or unauthorised amendment.

Please consider the environment before printing this email.
From: Keith Wilkins [KWilkins@groupwise.swin.edu.au]
Sent: 10 November 2006 17:34
To: Denny Meyer; jane.kovacs@qla.com.au
Subject: SUHREC Project 0607/061 Ethics Clearance

To: Dr Denny Meyer/Ms Jane Kovacs, FLSS/FBE

Dear Denny and Jane

SUHREC 0607/061 Facilitating Change in Australian Schools & Classrooms: Lessons from the Application of Business Improvement Concepts Dr D Meyer Ms Jane Kovacs FLSS/FBE Approved Duration to 30/06/2008.

I refer to your email today containing your response to ethics appraisal given to the above project. The clarification and attached revised consent statement were considered on behalf of Swinburne’s Human Research Ethics Committee (SUHREC) by the Chair of the Subcommittee concerned (SHES4).

I am pleased to advise that ethics clearance has now been given for the above project to proceed, the standard on-going ethics clearance conditions here outlined:

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the current National Statement on Ethical Conduct in Research Involving Humans and with respect to secure data use, retention and disposal.

- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/supervisor requires timely notification and SUHREC endorsement.

- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/ clearance. SUHREC must be notified immediately or as soon as possible thereafter of

  (a) any serious or unexpected adverse effects on participants and any redress measures;

  (b) proposed changes in protocols; and

  (c) unforeseen events which might affect continued ethical acceptability of the project.

- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project.

- A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact me if you have any concerns or queries about on-going ethics clearance and if you need a signed ethics clearance certificate.
The SUHREC project number should be cited in communication.

Best wishes for the project.

Yours sincerely

Keith Wilkins
Secretary, SHESC1

Keith Wilkins
Research Ethics Officer
Office of Research and Graduate Studies (Mail H68) Swinburne University of Technology
P O Box 218 HAWTHORN VIC 3122
Tel: 9214 5218

Education is only the beginning.
Let's get on with it.

Swinburne University of Technology
CRICOS Provider Code: 00111D

NOTICE
This e-mail and any attachments are confidential and intended only for the use of the addressee. They may contain information that is privileged or protected by copyright. If you are not the intended recipient, any dissemination, distribution, printing, copying or use is strictly prohibited. The University does not warrant that this e-mail and any attachments are secure and there is also a risk that it may be corrupted in transmission. It is your responsibility to check any attachments for viruses or defects before opening them. If you have received this transmission in error, please contact us on +61 3 9214 8000 and delete it immediately from your system. We do not accept liability in connection with computer virus, data corruption, delay, interruption, unauthorised access or unauthorised amendment.

Please consider the environment before printing this email.
Appendix 2
Victorian Department of Education and Training Approval

Department of Education & Training
Office of Learning and Teaching

SOS003154

Ms Jane Kovacs
PO Box 624
NORTH MELBOURNE 3051

Dear Ms Kovacs

Thank you for your application of 20 December 2005 in which you request permission to conduct a research study in government schools titled: Facilitating Change in Australian Schools: Lessons from the Application of Business Improvement Principles and Practices.

I am pleased to advise that on the basis of the information you have provided your research proposal is approved in principle subject to the conditions detailed below.

1. Should your institution’s ethics committee require changes or you decide to make changes, these changes must be submitted to the Department of Education and Training for its consideration before you proceed.

2. You obtain approval for the research to be conducted in each school directly from the principal. Details of your research, copies of this letter of approval and the letter of approval from the relevant ethics committee are to be provided to the principal. The final decision as to whether or not your research can proceed in a school rests with the principal.

3. No student is to participate in this research study unless they are willing to do so and parental permission is received. Sufficient information must be provided to enable parents to make an informed decision and their consent must be obtained in writing.

4. As a matter of courtesy, you should advise the relevant Regional Director of the schools you intend to approach. An outline of your research and a copy of this letter should be provided to the Regional Director.
5. Any extensions or variations to the research proposal, additional research involving use of the data collected, or publication of the data beyond that normally associated with academic studies will require a further research approval submission.

6. At the conclusion of your study, a copy or summary of the research findings should be forwarded to the Research and Development Branch, Department of Education and Training, Level 2, 33 St Andrews Place, GPO Box 4367 Melbourne 3001.

I wish you well with your research study. Should you have further enquiries on this matter, please contact Chris Warne, Project Officer, Research on (03) 9637 2272.

Yours sincerely,

[Signature]

Dr John McSwiney
Assistant General Manager (Acting)
Research and Innovation Division

2/1/2006

enc
Regional Directors

<table>
<thead>
<tr>
<th>Mr Wayne Craig</th>
<th>Mr Norm Dean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Director</td>
<td>Acting Regional Director</td>
</tr>
<tr>
<td><strong>Northern Metropolitan Region</strong></td>
<td><strong>Western Metropolitan Region</strong></td>
</tr>
<tr>
<td>582 Heidelberg Road</td>
<td>Level 4, 369 Royal Parade</td>
</tr>
<tr>
<td>FAIRFIELD 3078</td>
<td>PARKVILLE 3052</td>
</tr>
<tr>
<td>Phone: 9488 9488</td>
<td>Phone: 9291 6500</td>
</tr>
<tr>
<td>Fax: 9488 9400</td>
<td>Fax: 9291 6555</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mr Rob Blackford</th>
<th>Dr Jim Watterston</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acting Regional Director</td>
<td>Regional Director</td>
</tr>
<tr>
<td><strong>Southern Metropolitan Region</strong></td>
<td><strong>Eastern Metropolitan Region</strong></td>
</tr>
<tr>
<td>33 Princes Highway</td>
<td>2nd Floor, 29 Lakeside Drive</td>
</tr>
<tr>
<td>DANDENONG 3175</td>
<td>BURWOOD EAST 3151</td>
</tr>
<tr>
<td>Phone: 9794 3555</td>
<td>Phone: 9881 0200</td>
</tr>
<tr>
<td>Fax: 9794 3500</td>
<td>Fax: 9881 0241</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ms Glenda Strong</th>
<th>Mr Malcolm Millar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Director</td>
<td>Regional Director</td>
</tr>
<tr>
<td><strong>Barwon South Western Region</strong></td>
<td><strong>Grampians Region</strong></td>
</tr>
<tr>
<td>Vines Road</td>
<td>1220 Sturt Street</td>
</tr>
<tr>
<td>NORTH GEELONG 3215</td>
<td>BALLARAT 3350</td>
</tr>
<tr>
<td>Phone: 5272 8300</td>
<td>Phone: 5337 8444</td>
</tr>
<tr>
<td>Fax: 5277 9926</td>
<td>Fax: 5333 2135</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mr Ron Lake</th>
<th>Ms Adele Pottenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Director</td>
<td>Regional Director</td>
</tr>
<tr>
<td><strong>Loddon Mallee Region</strong></td>
<td><strong>Hume Region</strong></td>
</tr>
<tr>
<td>37-43 Havlin Street East</td>
<td>Anundil Street</td>
</tr>
<tr>
<td>BENDIGO EAST 3215</td>
<td>BENALLA 3672</td>
</tr>
<tr>
<td>Phone: 5440 3111</td>
<td>Phone 5761 2100</td>
</tr>
<tr>
<td>Fax: 5442 5321</td>
<td>Fax: 5762 5039</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mr Peter Greenwell</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Director</td>
<td></td>
</tr>
<tr>
<td><strong>Gippsland Region</strong></td>
<td></td>
</tr>
<tr>
<td>Cnr. Kirk and Haig Streets</td>
<td></td>
</tr>
<tr>
<td>MOE 3825</td>
<td></td>
</tr>
<tr>
<td>Phone: 5127 0400</td>
<td></td>
</tr>
<tr>
<td>Fax: 5126 1933</td>
<td></td>
</tr>
</tbody>
</table>
This page intentionally blank.
Appendix 3
Primary Data Collection Instrument

Quality in Schools School Self-assessment

Purpose

For Schools to:

- engage in dialogue about student learning, school performance and improvement
- measure progress and growth in organisational learning and application of the Quality approach
- identify opportunities for improvement, determine priorities and inform planning.

For the Researcher to:

- evaluate the impact of the Quality in Schools process upon school performance and student learning
- enhance understanding of the relevance and transferability of a quality improvement business model to education, and the sustainability of the Quality approach in schools and classrooms
- identify the key challenges associated with school improvement encountered by schools. This is to inform the design, deployment and continuous improvement of future professional development and support aimed at improving school performance.
## General School Information

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>School Name</td>
<td></td>
</tr>
<tr>
<td>Assigned Code</td>
<td></td>
</tr>
<tr>
<td>Date of assessment</td>
<td></td>
</tr>
<tr>
<td>Type of School (PS, SC, P-12, Special)</td>
<td></td>
</tr>
<tr>
<td>Like School Group</td>
<td></td>
</tr>
<tr>
<td>No. Students</td>
<td></td>
</tr>
<tr>
<td>No. Staff</td>
<td></td>
</tr>
<tr>
<td>No. on assessment team</td>
<td></td>
</tr>
<tr>
<td>Make up of assessment team</td>
<td>Principal:</td>
</tr>
<tr>
<td></td>
<td>Original Team Members:</td>
</tr>
<tr>
<td></td>
<td>Others:</td>
</tr>
<tr>
<td>Years during which the Quality in Schools was completed</td>
<td></td>
</tr>
<tr>
<td>No. on original Quality in Schools team</td>
<td></td>
</tr>
<tr>
<td>No. remaining at the school from the original team</td>
<td></td>
</tr>
<tr>
<td>Has the principal changed since QiS?</td>
<td>Yes</td>
</tr>
<tr>
<td>Other observations/comments</td>
<td></td>
</tr>
<tr>
<td>School Level Report 2005 collected?</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Name three characteristics of an excellent school...

What are three main drivers of continuous improvement at THIS school?

What are three main preventers of continuous improvement at THIS school?
Quality in Schools School Self-assessment

Questionnaire

Design

The self-assessment is based upon the 12 Principles of Quality introduced during Quality in Schools that summarise the theory underpinning Quality Improvement.

The 12 Principles of Contemporary Quality

1. **Purpose and Vision** - clear direction allows organisational alignment and a focus on the achievement of goals
2. **Planning** - mutually agreed plans translate organisational direction into actions
3. **Clients** - quality and value are determined by the client
4. **Processes** - to improve the outcome, improve the system and its processes
5. **Systems** - all people work in a system, outcomes are improved when people work on the system
6. **Data** - effective use of facts, data and knowledge leads to improved decisions
7. **Variation** - all systems and processes exhibit variability, which impacts upon predictability and performance
8. **Motivation** - the potential of an organisation is realised through its people’s enthusiasm, resourcefulness and participation
9. **Learning** - continual learning and innovation depend upon continual learning
10. **Community** - the organisation’s actions to ensure a clean, safe, fair and prosperous society enhance the perception of its value to the community
11. **Stakeholders** - sustainability is determined by an organisation’s ability to create and deliver value for all stakeholders
12. **Leadership** - senior leadership’s constant role modelling of these principles, and the creation of a supportive environment are necessary for the organisation to reach its potential

Australian Quality Council 2002

For each principle, a continuum comprising six sets (columns 1-6) of descriptive statements is provided. Principles 10 and 11 have been combined. There is an additional continua relating to the process of change in the school. The continua describe observable behaviour in the school. Column 1 on each continuum represents behaviour displaying very limited application of the Quality principles and practices. The depth and breadth of learning and application increases across each continuum (1 to 6). The final set of statements (column 6), represent a very deep, broad, and integrated understanding and application of the Quality philosophy.

The self-assessment process is intended to be undertaken in small teams of volunteer teaching, administration and support staff, typically 3-6 in number. (Larger numbers of participants can be divided into smaller teams and the scores achieved averaged.)
The Self-assessment Process

1. Appoint a time keeper to each team. There are 12 Principles to consider. Agree how much time you plan to spend on the self-assessment (usually 60 to 120 minutes). Apportion and monitor the time spent on each Principle accordingly.

2. Consider each Principle in turn. Evaluate one row of descriptors at a time, starting with column 1 through to column 6.

3. Identify the descriptor in each row that best describes your school. Tick the box. Record this on the record sheet provided.

4. As a team, agree a score for each row and overall column number (rating) for the principle. Record this on the summary sheet provided.

5. Use the Parking Lot tool (back page) to capture your ideas on sticky notes. Categorise the ideas generated as strengths; What is going well?, improvement ideas; What can we improve?, questions; What are the questions? and arising issues, challenges, ideas; What are the issues and ideas?

6. Answer the other questions (on the record sheet provided).

7. Give the record sheets to the researcher.


9. You may wish to prioritise your findings into an improvement plan (as part of your school planning process).
<table>
<thead>
<tr>
<th>Principle 1 - Purpose and Vision: Clear direction allows organisational alignment and a focus on the achievement of goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ We have never really discussed the purpose (or mission) of our school.</td>
</tr>
<tr>
<td>☐ Our school vision seems more like somebody’s hallucination.</td>
</tr>
<tr>
<td>☐ The school purpose and vision statements, if they exist, are usually seen as irrelevant.</td>
</tr>
<tr>
<td>☐ We do not actively consider vision or purpose in our classrooms.</td>
</tr>
<tr>
<td>☐ The purpose of learning and other activities is rarely discussed.</td>
</tr>
<tr>
<td>☐ We do not consider excellence in things we do.</td>
</tr>
</tbody>
</table>
Principle 2 - Planning: Mutually agreed plans translate organisational direction into actions

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>We may have plans, but most of us never use them.</td>
<td>We have a comprehensive and integrated whole-of-school planning process that reflects the needs of our key stakeholders and clearly specifies priorities and goals towards achievement of our purpose and vision.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>We have a school plan that is of little relevance to most staff.</td>
<td>We have the beginnings of a whole-of-school planning process that engages many staff and some stakeholders in setting priorities and goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>We have the planning process engages some staff and stakeholders in establishing priorities and goals.</td>
<td>Our school planning process engages most staff and our key stakeholders in establishing goals and priorities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Priorities are emerging, but not necessarily well supported.</td>
<td>Priorities are clear and supported by many staff as they focus our efforts, time and resources.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Priorities are clear and supported by most staff as they focus our efforts, time and resources.</td>
<td>Priorities are very clear and strongly supported to focus our efforts, time and resources.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Priorities are very clear and strongly supported to focus our efforts, time and resources.</td>
<td>Priorities are clear and supported by most staff as they focus our efforts, time and resources.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>We do not review progress against our goals.</td>
<td>We have little sense of priority.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>We do not review progress against our goals.</td>
<td>We have the beginnings of planning for improvement; however, there is no agreed or standard approach.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>We have a standard improvement process and tools that are being used by many staff and students.</td>
<td>We have a standard improvement process and tools that are being used by some staff and students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>The plan relates to our purpose and vision. The plan influences the budget.</td>
<td>The goals and priorities are tied to achievement of our purpose and vision, and are reflected in the school budget.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>The whole of school plan drives the school budget.</td>
<td>The goals and priorities are tied to achievement of our purpose and vision, and are reflected in the school budget.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Students and individual staff plans and goals are clearly aligned toward achievement of the whole of school goals and priorities.</td>
<td>The goals and priorities are tied to achievement of our purpose and vision, and are reflected in the school budget.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. None = 0%  2. Few = 10%  3. Some = 25%  4. Many = 50%  5. Most = 75%  6. Nearly all = 90%  7. All = 100%

Never = 0%  Rarely = 10%  Sometimes = 25%  Frequently = 50%  Mostly = 75%  Usually = 90%  Routinely = 100%
<table>
<thead>
<tr>
<th></th>
<th>Principle 3 - Clients: Quality and value are determined by the client</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>We don’t care about parent and student perceptions of the school</td>
</tr>
<tr>
<td></td>
<td>Teachers generally only meet with parents when there is a problem and rarely meet with parents and students at the same time.</td>
</tr>
<tr>
<td></td>
<td>We do not actively seek to manage client relationships, they just happen.</td>
</tr>
<tr>
<td></td>
<td>We do not have clients, we are a school.</td>
</tr>
<tr>
<td></td>
<td>Many staff members seek input from their clients within the school to better meet these needs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>None = 0%</th>
<th>Few = 10%</th>
<th>Some = 25%</th>
<th>Many = 50%</th>
<th>Most = 75%</th>
<th>Nearly all = 90%</th>
<th>All = 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>None = 0%</td>
<td>Few = 10%</td>
<td>Some = 25%</td>
<td>Many = 50%</td>
<td>Most = 75%</td>
<td>Mostly = 90%</td>
<td>Usually = 90%</td>
</tr>
</tbody>
</table>
## Principle 4 - Processes: To improve the outcome, improve the system and its processes

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ We frequently reinvent processes (sequences of actions to achieve one or more purposes) when people leave because they take with them the understanding and documentation of how things get done.</td>
<td>☐ We observe a few random acts of process improvement</td>
<td>☐ A few processes have been reviewed, measured and improved.</td>
<td>☐ Some key processes have been reviewed and improved with the measures to prove it.</td>
<td>☐ Many processes have been measured, reviewed and improved.</td>
<td>☐ Key processes are routinely measured, reviewed and improved after each cycle to maximise efficiency, effectiveness, student learning and success.</td>
</tr>
<tr>
<td>☒ Our process improvement efforts are not yet systematic.</td>
<td>☐ We have the beginnings of a system for managing, improving and documenting key school and classroom processes.</td>
<td>☐ We have a system for managing, improving and documenting key school and classroom processes in order to maximise efficiency, effectiveness, student learning and success.</td>
<td>☐ We have a comprehensive system for actively managing, improving and documenting our key school and classroom processes in order to maximise efficiency, effectiveness, student learning and success.</td>
<td>☐ For key processes everybody understands who is to do what, and when.</td>
<td></td>
</tr>
<tr>
<td>☐ Almost none of our processes are documented. There is widespread confusion about who needs to do what, by when.</td>
<td>☐ We have attempted to document a few processes, which has brought some clarity regarding responsibilities and timelines in these areas.</td>
<td>☐ Some school and classroom processes are documented, providing clarity for those involved.</td>
<td>☐ Responsibilities and timelines for key school and classroom processes are clear and agreed because they were determined by those affected.</td>
<td>☒ Responsibilities and timelines are understood and agreed</td>
<td></td>
</tr>
<tr>
<td>☐ There is widespread confusion about who is responsible for which school processes.</td>
<td>☒ Most staff members are unclear about who is responsible for which processes.</td>
<td>☒ Responsibilities for the administration and improvement of some processes have been assigned.</td>
<td>☒ Responsibilities for the administration and improvement of many processes have been assigned.</td>
<td>☒ Responsibilities for the administration and improvement of most processes have been assigned.</td>
<td></td>
</tr>
<tr>
<td>☐ When things go wrong, the first reaction is to identify who is at fault.</td>
<td>☒ We tend to blame individuals when things go wrong.</td>
<td>☒ We recognise that when things go wrong we need to improve processes, but we still tend to blame individuals.</td>
<td>☒ There is an increasing focus on processes and less on blaming individuals.</td>
<td>☒ When things go wrong we usually try to identify which processes let us down.</td>
<td></td>
</tr>
<tr>
<td>☐ None of our staff or students have been trained in process flowcharting.</td>
<td>☒ Few staff and students have been trained in process flowcharting.</td>
<td>☒ Some staff and students have been trained in process flowcharting.</td>
<td>☒ Many staff, especially those new to the school, have been trained and coached in the use of flowcharts. Flowcharts are in use in some classrooms.</td>
<td>☒ Most staff and students have received training in process flowcharting and are frequently engaged flowcharting processes.</td>
<td></td>
</tr>
<tr>
<td>☐ Everyone does things in their own ways; we have few agreed procedures or processes.</td>
<td>☐ Most people do things their own way, but we do have some agreed processes.</td>
<td>☐ Many people insist on doing things their own way, but others have agreed to follow standard school processes.</td>
<td>☐ Some people insist on doing things their own way, but many have agreed to follow standard school processes.</td>
<td>☔ Few people still insist on doing things their own way, while most see the benefits of following standard school processes.</td>
<td></td>
</tr>
</tbody>
</table>

---

**A**

**B**

**C**

**D**

**E**

**F**

**G**

---

**Quality Improvement in Australian Schools**

---

Page 303
## Principle 5 - Motivation: The potential of an organisation is realised through its people's enthusiasm, resourcefulness and participation

| A | Most of our time is spent managing student behaviour rather than improving student learning. Behaviour of students and staff is appalling. |
| B | We do not understand the barriers to excellent performance. |
| C | We have sophisticated systems for classification of bad student behaviour and determination of appropriate punishments. |
| D | Our attempts to punish bad behaviour and reward good behaviour are not producing sustainable improvement. |
| E | Recognition of staff and student achievement is rare. |
| F | We think our students have a work ethic problem. |
| G | Not many people like coming to this school. |
| H | Collaboration among staff is poor. |

### A - Most of our time is spent managing student behaviour rather than improving student learning. Behaviour of students and staff is appalling.

- We spend most of our time complaining about the behaviour of students and/or staff.
- We spend a lot of time complaining about the behaviour of students and/or staff. There is little discussion of the systems that drive behaviour.
- There is some understanding of the need to focus on improving systems that drive behaviour rather than trying to address the behaviour directly.
- There is a collective understanding of the need to focus on improving systems that drive behaviour (prevention) rather than trying to address the behaviour directly (control).
- Efforts to create productive relationships among staff and students are always focused on understanding and improving the systems that drive behaviour rather than attempting to manage the behaviour itself.

### B - We do not understand the barriers to excellent performance.

- We rarely identify and remove barriers to excellent performance.
- Some efforts are made to identify and remove barriers to excellent performance.
- Many efforts are made to identify and remove barriers to excellent performance.
- Effort is relentlessly applied at all levels to identify and remove barriers to excellent performance.

### C - We have sophisticated systems for classification of bad student behaviour and determination of appropriate punishments.

- We have systems for classification of bad student behaviour and determination of appropriate punishments.
- 'Behaviour Management' processes sometimes focus on the development of individual capacity for self-regulation of behaviour.
- 'Behaviour Management' processes are integrated with student welfare systems and clearly focus on the development of individual capacity for self-regulation of behaviour.
- Our student welfare clearly focuses on the development of individual capacity for self-regulation of behaviour.

### D - Our attempts to punish bad behaviour and reward good behaviour are not producing sustainable improvement.

- We have sophisticated reward systems offering prizes like 'gold stars', food, privileges and other bribes that have nothing to do with learning.
- Our reward systems offer prizes like 'gold stars', food, privileges and other bribes that have nothing to do with learning.
- Our extrinsic reward systems are being dismantled.
- Rewards are not the preferred method of acknowledging good behaviour or achievement.
- We never offer extrinsic rewards.

### E - Recognition of staff and student achievement is rare.

- Recognition of staff and student achievement is limited.
- Students and staff are sometimes recognised for their achievements.
- Students and staff are frequently recognised for their achievements.
- Recognition of staff and student achievement is plentiful.
- The use of punishment with staff and students is seen as the last resort.

### F - We think our students have a work ethic problem.

- Most members of staff believe that without punishment and rewards students will not perform well.
- Some members of staff believe that without punishment and rewards students will not perform well.
- Punishing students for bad behaviour is fairly common.
- Punishments are not the preferred method of addressing poor choices.
- The intrinsic satisfaction of achievement is the reward sought by staff and students.

### G - Not many people like coming to this school.

- Few staff and students find joy in being at school.
- Some staff and students find joy in being at school.
- Many staff and students derive satisfaction from their efforts at school.
- Most staff and students derive satisfaction from their efforts at school.
- The intrinsic satisfaction of achievement is the reward sought by staff and students.

### H - Collaboration among staff is poor.

- There is evidence of some collaboration for improvement.
- Many staff members collaborate with their colleagues and students.
- There is strong evidence of collaboration for improvement among staff and in classrooms.
- Collaboration for improvement is the dominant mode of operation across staff and within classrooms.
**Principle 6 - Learning: Continual improvement and innovation depend upon continual learning**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Quality Improvement in Australian Schools**

1. We make few attempts to improve things.
2. Our attempts to improve things are ad-hoc and reactive.
3. Some staff and students are beginning to apply a structured improvement process.
4. We have a structured process for improvement in use by many staff and students.
5. Most staff and students and some stakeholders are engaged in improvement teams during the school year.
6. All staff, students and many stakeholders routinely work together using our school's standardised improvement process.

- We establish improvement teams in priority areas.
- We have the beginnings of a structured program of improvement teams across all levels of the school.
- We have a structured program of improvement activities at school, faculty, class and individual levels.
- We make few attempts to improve things.
- Our attempts to improve things are ad-hoc and reactive.
- Some staff and students are beginning to apply a structured improvement process.
- We have a structured process for improvement in use by many staff and students.
- Most staff and students and some stakeholders are engaged in improvement teams during the school year.
- All staff, students and many stakeholders routinely work together using our school's standardised improvement process.

7. We never measure the extent of our success.
8. We do not usually define measures to determine if our improvement efforts are successful.
9. Measures of success are sometimes defined for each improvement effort.
10. We usually define measures of success for each improvement effort.
11. We have data to demonstrate improvement in many areas.
12. We always have comprehensive data to assess the success of our improvement efforts.

13. Neither teachers nor students set learning goals.
14. Students and teachers rarely engage in goal setting for their learning.
15. Students and teachers sometimes engage in setting goals for their learning.
16. Students and teachers engage in setting goals for their learning.
17. Students and teachers routinely set and monitor progress against their own learning goals.
18. All staff and students set their own learning goals and monitor progress towards them.

19. We do not self-assess.
20. Students, staff and the organisation as a whole, rarely undertake self-assessment of performance or achievement.
21. Students, staff and the organisation sometimes engage in self assessment to monitor progress and identify opportunities for improvement.
22. Students, staff and the organisation frequently engage in self assessment to monitor progress and set priorities for improvement.
23. Students and staff mostly engage in self assessment to monitor improvement and set priorities.
24. Self assessment is an integral part of monitoring progress and improvement planning at the student, staff and whole organisation levels.

25. Our improvement approach is without structure.
26. We may have learned a few improvement tools. We try different programs from time to time, but few seem to really make things better.
27. We apply specific improvement tools. We can show examples of quantifiable improvement.
28. We apply an increasing range of improvement tools. We can show many examples of successful improvement projects.
29. All improvement teams use the school's structured improvement process, define measures of success and draw on our suite of improvement tools.
30. Our improvement process has itself been the subject of at least two rounds of structured improvement.

31. We know little about quality standards.
32. There is some discussion of quality standards (distinguishing features of excellence that can be evaluated).
33. Some quality standards have been defined and are used by students and staff.
34. Students contribute to the definition of quality standards and use them for self assessment of their learning.
35. Quality standards are routinely defined in most classrooms and across the school.
36. Use of quality standards is standard practice.

37. Students do not understand why they are engaged in their various learning activities.
38. Few students understand why they are engaged in their various learning activities.
39. Some students understand why they are engaged in the various learning activities.
40. Many students understand why they are engaged in their learning activities.
41. Most students see clearly the connection between what they are learning and their futures.
42. All students understand and can articulate the connection between what they are learning and their futures.

**Quality Improvement in Australian Schools**

None = 0%  Few = 10%  Some = 25%  Many = 50%  Most = 75%  Nearly all = 90%  All = 100%

Never = 0%  Rarely = 10%  Sometimes = 25%  Frequently = 50%  Mostly = 75%  Usually = 90%  Routinely = 100%
Principle 7 - Systems: All people work in a system, outcomes are improved when people work on the system

<table>
<thead>
<tr>
<th>A</th>
<th>Most staff members are unaware of the concept of organisations as complex and interconnected systems.</th>
<th>Some staff members see the school as a complex and interconnected system incorporating many sub-systems.</th>
<th>Many staff members are beginning to see the school as a complex and interconnected system incorporating many sub-systems (such as classroom and library).</th>
<th>Most staff members recognise the school as a complex and interconnected system that has been analysed, and documented.</th>
<th>Most staff members recognise the school as a complex and interconnected system that has been analysed, documented and improved.</th>
<th>All staff members recognise the school as a complex interconnected system that has been analysed, documented and improved.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>No attempts have been made to analyse and document the school as a system.</td>
<td>Some attempts have been made to analyse and document the school as a system.</td>
<td>The school system has been discussed, analysed and documented.</td>
<td>Some staff have analysed and documented the sub-systems for which they are responsible.</td>
<td>Most staff have analysed and documented the sub-systems for which they are responsible.</td>
<td>All staff have analysed and documented the sub-systems for which they are responsible.</td>
</tr>
<tr>
<td>C</td>
<td>All staff members spend their time doing the ‘daily work’ of the school with no time spent improving systems.</td>
<td>Nearly all staff members spend their time doing the ‘daily work’ of the school and little time on improving systems.</td>
<td>Most staff members spend the bulk of their time doing the ‘daily work’ of the school and little time working on improving systems. Only some allocate time to working on improving systems.</td>
<td>Many members of staff allocate time to working on improving systems as well as completing the ‘daily work’ of the school.</td>
<td>All members of staff allocate time to working on improving systems as well as completing the ‘daily work’ of the school.</td>
<td>It is routine for students to engage in discussion about their classrooms as learning systems that can be analysed, documented and improved.</td>
</tr>
<tr>
<td>D</td>
<td>Nearly all classrooms operate with minimal consideration of students’ in other classes, past, present or future.</td>
<td>Most classrooms operate with minimal consideration of students’ in other classes, past, present or future.</td>
<td>Most classrooms operate with some consideration for what students experienced in previous classes and will experience in future classes.</td>
<td>Most classrooms operate with careful consideration for what students experienced in previous classes and what will best prepare them well for experience in future classes.</td>
<td>Nearly all classrooms operate with careful consideration for what students experienced in previous classes (even if at other schools) and what is needed to prepare them well for future experiences.</td>
<td>All systems within the school are optimized to the achievement of whole-school goals, especially maximizing student learning and success.</td>
</tr>
<tr>
<td>E</td>
<td>Almost none of our school policies, processes (procedures) or forms are documented.</td>
<td>Few school policies, processes or forms are documented.</td>
<td>Some school policies, processes and forms have been documented.</td>
<td>Many school policies, processes and forms have been documented and can be obtained if required.</td>
<td>Most school policies, processes and forms have been documented and are accessible to all who need them.</td>
<td>School policies, processes and forms have been systematically documented and are easily available to all who need them. All staff are trained, coached and supported in their use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>None = 0%</td>
<td>Few = 10%</td>
<td>Some = 25%</td>
<td>Many = 50%</td>
<td>Most = 75%</td>
<td>Nearly all = 90%</td>
</tr>
<tr>
<td>Never = 0%</td>
<td>Rarely = 10%</td>
<td>Sometimes = 25%</td>
<td>Frequently = 50%</td>
<td>Mostly = 75%</td>
<td>Usually = 90%</td>
</tr>
</tbody>
</table>
**Principle 8 - Data: Effective use of facts, data and knowledge leads to improved decisions**

<table>
<thead>
<tr>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

- **A**
  - We avoid using data whenever possible.
  - Some data are sought to inform key decisions. We have few performance measures in place.
  - We have some data before making key decisions or setting priorities. We have some performance measures in place at the student, class, staff, team and school levels.
  - We have some performance measures in place at the student, class, staff, team and school levels. These measures relate to our school vision, purpose and values.
  - Comprehensive and explicit performance measures are in place for all students, classes, staff, teams and at the whole school level. These measures relate to the achievement of our agreed vision, purpose and values.
  - All students, classes, staff and teams have performance measures they believe in and use to evaluate their performance and progress towards the school vision and purpose.

- **B**
  - We have few data useful for diagnosing problems, identifying opportunities for improvement or predicting future performance.
  - We have some data that can be used to diagnose problems, identifying opportunities for improvement and predicting future performance.
  - We attempt to plan to ensure we will have the data we will need to monitor performance, identify opportunities for improvement, inform key decisions, predict future performance, diagnose problems and set priorities.
  - We explicitly and consciously measure the things that we consider important to us so we can monitor performance, identify opportunities for improvement, inform key decisions, predict future performance, diagnose problems and set priorities.
  - We have a well developed system of measurement for the things that we consider important. We can monitor performance, identify opportunities for improvement, inform key decisions, predict future performance, diagnose problems and set priorities.

- **C**
  - Decisions are mostly based on ‘gut feel’.
  - Staff and student capacity to collect, display and interpret data is limited.
  - Some staff and students demonstrate the capacity to collect, display and interpret data.
  - Many staff and students demonstrate the capacity to collect, display and interpret data.
  - Most staff and students demonstrate the capacity to collect, display and interpret data.
  - Nearly all staff and students demonstrate the capacity to collect, display and interpret data.

- **D**
  - We do not really know how we are performing.
  - Staff and students have limited access to the data they need.
  - Staff and students have access to only some of the data they need.
  - Staff and students have access to most of the data they need.
  - Staff and students have access to the data they need.
  - Staff and students have access to all the data they need.

- **E**

```
<table>
<thead>
<tr>
<th>None</th>
<th>Few</th>
<th>Some</th>
<th>Many</th>
<th>Most</th>
<th>Nearly all</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
<td>25%</td>
<td>50%</td>
<td>75%</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>0%</td>
<td>10%</td>
<td>25%</td>
<td>50%</td>
<td>75%</td>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>
```
### Principle 9 - Variation: All systems and processes exhibit variability, which impacts upon predictability and performance

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>We rarely distinguish between causes and symptoms of problems</td>
<td>We rarely distinguish between causes and symptoms of problems.</td>
</tr>
<tr>
<td>We sometimes look for root underlying causes of problems rather then trying to fix the symptoms.</td>
<td>We sometimes look for root underlying causes of problems rather than trying to fix the symptoms.</td>
</tr>
<tr>
<td>We are beginning to analyse situations to identify the root underlying causes of variation before attempting to fix problems.</td>
<td>We are beginning to analyse situations to identify the root underlying causes of variation before attempting to fix problems.</td>
</tr>
<tr>
<td>We usually ensure we understand the nature, root causes and impact of variation with our systems and processes before we make changes.</td>
<td>We usually ensure we understand the nature, root causes and impact of variation with our systems and processes before we make changes.</td>
</tr>
<tr>
<td>We are beginning to analyse situations to identify the root underlying causes of variation before attempting to fix problems.</td>
<td>We are beginning to analyse situations to identify the root underlying causes of variation before attempting to fix problems.</td>
</tr>
<tr>
<td>We usually ensure we understand the nature, root causes and impact of variation with our systems and processes before we make changes.</td>
<td>We usually ensure we understand the nature, root causes and impact of variation with our systems and processes before we make changes.</td>
</tr>
<tr>
<td>We always ensure we understand the nature, root causes and impact of variation with our systems and processes before making changes.</td>
<td>We always ensure we understand the nature, root causes and impact of variation with our systems and processes before making changes.</td>
</tr>
<tr>
<td>We do not recognise the need to clearly define concepts to reduce confusion and misunderstanding.</td>
<td>We do not recognise the need to clearly define concepts to reduce confusion and misunderstanding.</td>
</tr>
<tr>
<td>We rarely agree on precise definitions of concepts (like ‘good work’ or ‘on time’) so there are frequently differences in understanding among staff and students.</td>
<td>We rarely agree on precise definitions of concepts (like ‘good work’ or ‘on time’) so there are frequently differences in understanding among staff and students.</td>
</tr>
<tr>
<td>We occasionally agree on precise definitions of concepts and can see how this reduces confusion and misunderstandings.</td>
<td>We occasionally agree on precise definitions of concepts and can see how this reduces confusion and misunderstandings.</td>
</tr>
<tr>
<td>We increasingly create operational definitions (definitions by which we agree to operate) among staff and students to ensure clarity and reduce misunderstanding.</td>
<td>We increasingly create operational definitions (definitions by which we agree to operate) among staff and students to ensure clarity and reduce misunderstanding.</td>
</tr>
<tr>
<td>We usually differentiate between common cause variation within our systems and processes.</td>
<td>We usually differentiate between common cause variation within our systems and processes.</td>
</tr>
<tr>
<td>We use statistical tools (e.g. Histograms and Control Charts) to help us.</td>
<td>We use statistical tools (e.g. Histograms and Control Charts) to help us.</td>
</tr>
<tr>
<td>We routinely use statistical tools (e.g. Histograms and Control Charts) to differentiate common cause variation in our systems and processes.</td>
<td>We routinely use statistical tools (e.g. Histograms and Control Charts) to differentiate common cause variation in our systems and processes.</td>
</tr>
<tr>
<td>We rarely use data to understand performance.</td>
<td>We rarely use data to understand performance.</td>
</tr>
<tr>
<td>We usually rely on single measurements and averages to make ‘data based’ decisions.</td>
<td>We usually rely on single measurements and averages to make ‘data based’ decisions.</td>
</tr>
<tr>
<td>We mostly use single measurements and averages, but sometimes seek to understand the variation in the systems and processes producing these numbers.</td>
<td>We mostly use single measurements and averages, but sometimes seek to understand the variation in the systems and processes producing these numbers.</td>
</tr>
<tr>
<td>We recognise the need to understand the distributions and variation behind single measurements and averages, and sometimes display our data to enhance our understanding of variation.</td>
<td>We recognise the need to understand the distributions and variation behind single measurements and averages, and sometimes display our data to enhance our understanding of variation.</td>
</tr>
<tr>
<td>We usually seek to display data in such a way that the variation within our systems and processes is evident along with average performance.</td>
<td>We usually seek to display data in such a way that the variation within our systems and processes is evident along with average performance.</td>
</tr>
<tr>
<td>Data are nearly always displayed in a manner that enhances understanding of performance including system and process variation.</td>
<td>Data are nearly always displayed in a manner that enhances understanding of performance including system and process variation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Few</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Some</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Many</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Most</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Nearly all</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>All</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Never</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Rarely</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Frequently</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Mostly</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Usually</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>Routinely</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Principle 10 - Stakeholders: Organisations provide value to their community through their actions to ensure a clean, safe, fair and prosperous society

Principle 11 - Sustainability is determined by an organisation’s ability to create and deliver value for all stakeholders

| A | We are aware that the school has many stakeholders (people and groups with an interest in the activities and outcomes of our school: such as feeder and destination schools, our community, funding bodies, government agencies, District/Region, potential employers, etc.) | We are conscious of some of our stakeholders. | Some stakeholders in the school have been identified. | Key stakeholders in the school are identified and agreed. | Most of the stakeholders in the whole school, especially the key ones, are identified and agreed. | All stakeholders in the whole school are clearly identified, agreed and prioritised. |
| B | Stakeholder contribution to school direction setting is limited to recounting anecdotes at school meetings. | Some stakeholders contribute to direction setting for the school in an unplanned and unstructured way. | Key stakeholders are invited to provide input to school values and direction. | Key stakeholders play an active role in setting the values and direction for the school. | Key stakeholders make an active and ongoing contribution to setting the direction, values, vision and purpose of the school. |
| C | Stakeholders are mostly seen as sources of irritation. | We do not have processes in place to manage relationships with stakeholders. | Our processes for managing stakeholder relationships are not well developed. | Some stakeholder management processes exist and are sometimes followed. | A system of stakeholder management processes is developing to actively monitor and manage relationships with key stakeholders. | Comprehensive and integrated processes are in place to actively monitor and manage relationships with key stakeholders. |
| D | Stakeholders in different parts of the school, including classrooms and the office, have not been identified. | Some stakeholders in different parts of the school, including classrooms and the office, have been identified. | Many stakeholders in different parts of the school, including classrooms and the office, have been identified. | Most classrooms have identified and agreed their stakeholders. This has also been done for some other parts of the school (e.g. Office, faculty, library, etc.) | All classrooms have identified, agreed and prioritised their stakeholders. This has also been done for other parts of the school (e.g. Office, faculty, library, etc.) | The school routinely measures key stakeholder perceptions of the school and acts upon them to improve school systems and processes. |
| E | We do nothing to influence and assist the broader community and protect the environment beyond the boundaries of the school. | We do little to influence and assist the broader community and protect the environment beyond the boundaries of the school. | Some parts of the school engage in projects and activities that influence and assist the broader community and protect the environment beyond the boundaries of the school. (e.g. Recycling initiatives, donations and assistance to charities) | The whole school is engaged in several projects and activities that influence and assist the broader community and protect the environment beyond the boundaries of the school. (e.g. Recycling initiatives, donations and assistance to charities) | We actively seek out and engage in projects and activities that influence and assist the broader community and protect the environment beyond the boundaries of the school. (e.g. Recycling initiatives, donations and assistance to charities) | We lead, create and participate in significant projects and activities that influence and assist the broader community and protect the environment beyond the boundaries of the school. (e.g. Recycling initiatives, donations and assistance to charities) |
**Principle 12 - Leadership: Senior leadership’s constant role modeling of these principles, and the creation of a supportive environment are necessary for the organisation to reach its potential**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are few opportunities for staff or students to demonstrate leadership.</td>
<td>Opportunities to develop leadership skills among staff and students are limited and are only sometimes supported.</td>
<td>Opportunities for staff and students to develop their leadership potential are not extensive.</td>
<td>There is some consciousness of the need to develop leadership capacity in staff and students; however, plans to do so are not comprehensive.</td>
<td>Staff and students are supported with opportunities to build their leadership capacity and develop further as leaders.</td>
<td>Leadership capacity development in staff and students is a priority for the school. We have the beginnings of an integrated approach.</td>
</tr>
<tr>
<td>Leadership is largely seen as limited to those in positions of authority.</td>
<td>We have a few good leaders, not necessarily in formal positions of authority.</td>
<td>Measures of leadership capacity among staff and students are limited to subjective assessments.</td>
<td>Some measures of leadership capacity among staff and students are in place.</td>
<td>Most measures of leadership capacity among staff and students are in place and are agreed.</td>
<td>The development of leadership capacity at the individual and school levels is a key strategic priority that is well integrated into school plans, individual development plans and budgets.</td>
</tr>
<tr>
<td>‘Senior leaders’ tend to manage and control rather than support, inspire and enable.</td>
<td>Only a few people in formal leadership positions behave in a manner that is ethical and consistent with the school values and an agreed school philosophy.</td>
<td>Many people in formal leadership positions behave in a manner that is ethical and consistent with the school values and an agreed school philosophy.</td>
<td>The behaviour of leaders, including those in formal positions of authority, is mostly consistent with our agreed school values and philosophy.</td>
<td>All individuals in formal leadership positions, most staff and students role model our agreed school values and philosophy.</td>
<td>Development of leadership capacity among staff and students is a priority for the school. We have the beginnings of an integrated approach.</td>
</tr>
<tr>
<td>We have not identified the school leadership systems and processes.</td>
<td>We have identified few school leadership systems and processes.</td>
<td>Few key school leadership systems and processes have been identified and documented.</td>
<td>Some key school leadership systems and processes have been identified, documented and agreed.</td>
<td>Most key school leadership systems and processes have been identified, documented and agreed. Many of these incorporate robust improvement processes.</td>
<td>Development of leadership capacity among staff and students is a priority for the school. We have the beginnings of an integrated approach.</td>
</tr>
<tr>
<td>The questions asked by ‘senior leaders’ do not help us to improve.</td>
<td>Few people ask or frame questions in a way that is helpful to our improvement efforts.</td>
<td>Some people in senior leadership positions, and many others, ask and frame questions in a way that is helpful to our improvement efforts.</td>
<td>Many people tend to ask and frame questions in a way that is helpful to our improvement efforts.</td>
<td>Most people tend to ask and frame questions in a way that is helpful to our improvement efforts.</td>
<td>Everyone asks and frames questions in a way that is helpful to our improvement efforts.</td>
</tr>
</tbody>
</table>
### School Change: Change as a process not an event

<table>
<thead>
<tr>
<th></th>
<th>Change at our school is considered by most to be painful, frustrating, wasteful and not usually successful.</th>
<th>Attempts to make changes at the school usually have little to do with improving student learning.</th>
<th>Some attempt is made to align proposed changes with school plans, priorities and goals. However, these plans, priorities and goals are not agreed and seem to change rapidly.</th>
<th>We have plans for improvement; however, priorities seem to keep changing. Consideration is sometimes given to the impact of the proposed change on agreed plans, priorities and goals.</th>
<th>We have a plan for improvement with priorities, goals and timelines. Proposals for change are considered for their potential contribution to the priorities and goals.</th>
<th>Our school has a clear plan for improvement with agreed priorities, goals and timelines that represent a consistent direction over time. All proposals for change are carefully considered in the context of their potential contribution to priorities and goals.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change is nearly always imposed with no consideration of the needs or priorities of those affected.</td>
<td>Change is usually imposed with little consideration of the needs and priorities of those affected.</td>
<td>Those affected by the changes are consulted, but usually after the decisions are taken and plans developed.</td>
<td>The needs of the individuals affected by the proposed change are sometimes considered.</td>
<td>Planning for change usually recognises individual needs and the psychological transition experienced during change.</td>
<td>Plans for change explicitly recognise individual needs and the personal psychological transition experienced during change.</td>
</tr>
<tr>
<td></td>
<td>During implementation, support is limited to briefings and being told what to do.</td>
<td>Support is provided to those involved in change, but is limited in nature.</td>
<td>Individuals are frequently provided with support through the change process.</td>
<td>Individuals affected by the change are sometimes included in planning the change and its implementation.</td>
<td>Opportunity is frequently given to those affected by the change to participate in planning the change and its implementation.</td>
<td>Where changes are required, opportunity is given to those affected by the change to participate in planning the change and its implementation.</td>
</tr>
<tr>
<td></td>
<td>Most staff members are sick of endless waves of new programs: 'fad surfing'.</td>
<td>Few changes are successfully implemented. Frustration is very high.</td>
<td>Some changes work, others do not. Frustration is high.</td>
<td>Attempts to bring about change are frequently successful, though frustrating for many involved.</td>
<td>Change is usually successful and only sometimes seen as frustrating.</td>
<td>People associate change with ‘making things better for us all’ so change usually occurs with little fuss or disruption.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We seem always to be picking up the latest fad.</td>
<td>We no longer pick up all the latest programs, but many of them.</td>
<td>We are becoming more discerning in which new programs we adopt.</td>
<td>We are selective in which new programs we adopt.</td>
<td>We adopt a limited number of new programs that are aligned to our purpose and vision, only after careful consideration.</td>
</tr>
</tbody>
</table>

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None = 0%</td>
<td>Few = 10%</td>
<td>Some = 25%</td>
<td>Many = 50%</td>
<td>Most = 75%</td>
<td>Nearly all = 90%</td>
</tr>
<tr>
<td>2</td>
<td>Never = 0%</td>
<td>Rarely = 10%</td>
<td>Sometimes = 25%</td>
<td>Frequently = 50%</td>
<td>Mostly = 75%</td>
<td>Usually = 90%</td>
</tr>
</tbody>
</table>
Parking Lot

What is going well?  What can we improve?

What are the questions?  What are the issues and ideas?

www.qla.com.au

Copyright 2015 Quality Learning Australia Limited in Practice Version 1.0
Appendix 4
Permission Form

Permission Form for Schools Providing Primary and Secondary Data

Dear Research Study Participant,

Re: Form of Disclosure and Informed Consent – Doctoral Research

Thank you for agreeing to participate in this study.

This form provides details of research to be undertaken towards achieving the Doctorate of Business Administration, Swinburne University of Technology. It provides for consent on the part of a participant agreeing to take part in the study.

Project Title:
Facilitating Change in Australian Schools: Lessons from the Application of Business Improvement Principles and Practices

Investigators:
Dr Denny Mayer (Supervisor)
Swinburne University of Technology
Faculty of Life and Social Sciences – Hawthorn Campus
HE4 PO Box 218
Hawthorn VIC 3122
Phone 03 9214 4824

Professor Chris Christodoulou (Associate Investigator/Supervisor)
Australian Graduate School of Entrepreneurship
Swinburne University of Technology
PO Box 218
Hawthorn VIC 3122
Phone 03 9214 8482

Jane Kovacs (Student)
PO Box 624
North Melbourne VIC 3051
Phone 03 9370 9944
Mobile Phone 0418 393 460
Explanation of Project:
The 'Quality in Schools' program was developed by the Australian Quality Council, (now a part of the SAI Global organisation) in conjunction with the Victorian Department of Education. The two-year program, designed specifically for schools, was conducted in Victoria between 1997 and 2000.

The purpose of the program was to develop educator capacity in the principles, practices and tools of Quality Improvement. The Quality Improvement approach is well known within industry, where it is proven to positively impact upon organisational performance and productivity.

The aim of this research is to evaluate the impact that the Quality Improvement approach has had on the schools taking part, its contribution to school and classroom improvement, and most importantly student learning. The study will attempt to determine the key challenges experienced by schools in taking part in this initiative.

It is hoped that the findings of the research will show a positive correlation between adoption of the approach and school improvement against key performance indicators. Also that the information gained can be used to inform the design and delivery of current and future school improvement.

Process:
The principal is asked to call for 4-10 volunteer teaching, administrative and/or leadership staff, and parents to take part in a structured school focus group session.

The self-assessment process will take 1-2 hours. It will involve the use of a questionnaire. Each participant will be provided with a copy of the questionnaire at the time of the interview. Participants are asked to evaluate school and classroom activity using a set of 12 continua and answer several qualitative questions.

Participants will not be required to give their name and will therefore remain anonymous for the purposes of the research.

Notes will be taken by the interviewer.

The school will also be asked to provide school performance data from the last five years (i.e. a copy of the most recent School Level Report).

Notes and other documents will be coded as to the school source. The data obtained through this process will remain securely stored for the duration of the study and destroyed five years after completion of the study. The school and participants will not be identified in any report.

Participants are free to withdraw their consent and to discontinue participation in the study at any time.
Any questions regarding the project can be directed to the Senior Investigator:

Dr Denny Meyer (Supervisor)
Swinburne University of Technology
Faculty of Life and Social Sciences - Hawthorn Campus
H24 PO Box 218
Hawthorn VIC 3122
Phone 03 9214 4824

Privacy Protection:
The research project presents no risk to participants. All raw data will remain confidential and participants and schools will not be identified by name. The survey methods will involve general evaluation/interview only and results and findings will not refer to specific schools or participants by name.

Schools will be coded to protect their privacy and only the senior investigator and student investigator will have access to the codes used.

It is intended that the project findings be published as a doctoral thesis and may be used by:

- Educators and Schools
- The Victorian Department of Education
- Other organisations supporting and facilitating school change

Complaint Procedure:
In the event that a complaint or concerns about the conduct of this project please contact:

Research Ethics Officer
Office of Research and Graduate Studies (H68),
Swinburne University of Technology, PO Box 218, HAWTHORN VIC 3122.
Tel (03) 9214 5218 or +61 3 9214 5218. Email: resethis@swin.edu.au

Please complete and sign the attached form to indicate your willingness and consent to take part in the research.

Thank you.

Sincerely

Jane Kovace
Consent Form

I (name and address of the participant)

have read (or, as appropriate, have had read to me) and understood the information above. Any questions I have asked have been answered to my satisfaction.

I agree to participate in this activity, realising that I may withdraw at any time.

I agree that the interview may be recorded on audio tape as data on the condition that no part of it is included in any presentation or public display.

I agree that research data collected for the study may be published or provided to other researchers on the condition that anonymity is preserved and that I cannot be identified.

NAME OF PARTICIPANT ........................................................................................................
SIGNATURE ..................................................................................................................DATE...

NAME OF AUTHORISED REPRESENTATIVE .................................................................
RELATIONSHIP TO THE PARTICIPANT .................................................................
or
POSITION ..................................................................................................................
SIGNATURE ..................................................................................................................DATE...

NAME/S OF PRINCIPAL INVESTIGATOR/S ................................................................
SIGNATURE ..................................................................................................................DATE...
SIGNATURE ..................................................................................................................DATE...
Permission Form for Control Schools Providing Only Secondary Data

Dear Research Study Participant,

Re: Form of Disclosure and Informed Consent – Doctoral Research

Thank you for agreeing to participate in this study.

This form provides details of research to be undertaken towards achieving the Doctorate of Business Administration, Swinburne University of Technology. It provides for consent on the part of a participant agreeing to take part in the study.

Project Title:
Facilitating Change in Australian Schools: Lessons from the Application of Business Improvement Principles and Systems

Investigators:
Dr Denny Meyer (Supervisor)
Swinburne University of Technology
Faculty of Life and Social Sciences – Hawthorn Campus
H24 PO Box 218
Hawthorn VIC 3122
Phone 03 9214 4014

Professor Chris Christodoulou (Associate Investigator / Supervisor)
Australian Graduate School of Entrepreneurship
Swinburne University of Technology
PO Box 218
Hawthorn VIC 3122
Phone 03 9214 9462

Jase Kovace (Student)
PO Box 426
North Melbourne VIC 3051
Phone 03 9370 5944
Mobile Phone 0418 393 460

Swinburne University of Technology
Explaination of Project:
The 'Quality in Schools' program was developed by the Australian Quality Council, now a part of the SAI Global organisation, in conjunction with the Victorian Department of Education. The two-year program, designed specifically for schools, was conducted in Victoria between 1997 and 2004.

The purpose of the program was to develop educator capacity in the principles, practices and tools of Quality Improvement. The Quality Improvement approach is well known within industry, where it is proven to positively impact upon organizational performance and proactivity.

The aim of this research is to evaluate the impact that the Quality Improvement approach has had on the schools taking part, its contribution to school and classroom improvement, and most importantly student learning. The study will attempt to determine the key challenges experienced by schools in taking part in this initiative.

It is hoped that the findings of the research will show a positive correlation between adoption of the approach and school improvement against key performance indicators. Also that the information gained can be used to inform the design and delivery of current and future school improvement.

Process for Control Group Schools:
A control group of schools that have not participated in the Quality in Schools program will be selected based on their similarity to the participating schools sampled. Control school data is to be used for comparative purposes.

The control school will be asked to provide school performance data from the last five years (i.e. a copy of the most recent School Level Report).

The document will be coded as to the school source. The data obtained through this process will remain securely stored for the duration of the study and destroyed five years after completion of the study. The school and participants will not be identified in any report.

Participants are free to withdraw their consent and to discontinue participation in the study at any time.

Any questions regarding the project can be directed to the Senior Investigator:

Dr Denys Meyer (Supervisor)
Swinburne University of Technology
Faculty of Life and Social Sciences - Hawthorn Campus
H24 PO Box 218
Hawthorn VIC 3122
Phone 03 9214 4824
Privacy Protection:
The research project presents no risk to participants. All raw data will remain confidential and participants and schools will not be identified by name. The survey methods will involve general evaluation/interview only and results and findings will not refer to specific schools or participants by name.

Schools will be coded to protect their privacy and only the senior investigator and student investigator will have access to the codes used.

It is intended that the project findings be published as a doctoral thesis and may be used by:

- Educators and Schools
- The Victorian Department of Education
- Other organisations supporting and facilitating school change

Complaint Procedure:
In the event that a complaint or concerns about the conduct of this project please contact:

Research Ethics Officer
Office of Research and Graduate Studies (H68),
Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122.
Tel (03) 9214 5218 or +61 3 9214 5218. Email: research@swin.edu.au

Please complete and sign the attached form to indicate your willingness and consent to take part in the research.

Thank you.

Sincerely

Jane Kovacs
Consent Form

I (name and address of the participant)

have read (or, as appropriate, have had read to me) and understood the information above. Any questions I have asked have been answered to my satisfaction.

I agree to participate in this activity, realising that I may withdraw at any time.

I agree that the interview may be recorded on audio tape as data on the condition that no part of it is included in any presentation or public display.

I agree that research data collected for the study may be published or provided to other researchers on the condition that anonymity is preserved and that I cannot be identified.

NAME OF PARTICIPANT

SIGNATURE

DATE

NAME OF AUTHORISED REPRESENTATIVE

RELATIONSHIP TO THE PARTICIPANT

or

POSITION

SIGNATURE

DATE

NAME(S) OF PRINCIPAL INVESTIGATOR(S)

SIGNATURE

DATE

SIGNATURE

DATE
## Appendix 5

### School Data Summary Spreadsheets

### Quality Schools Self-Assessment Score Data

| Quality School Assigned Code | LSG  | No. Students | QIS Group | Years applied (to 2005) | Principal Consistent? | No. QIS Team Remaining | Principle 1 Score | Principle 2 Score | Principle 3 Score | Principle 4 Score | Principle 5 Score | Principle 6 Score | Principle 7 Score | Principle 8 Score | Principle 10/11 Score | Principle 12 Score | Item 13 Score | Total Score (72) |
|-----------------------------|------|--------------|-----------|-------------------------|-----------------------|------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------|-----------------|
| P1                          | 1    | 398          | 1999-2000 (2) | 5                      | No                   | Yes                  | 3                 | 3                 | 4                 | 4                 | 4                 | 3                 | 3                 | 3                 | 5               | 3               | 4               | 4               | 4               | 43               |
| P2                          | 1    | 391          | 2001-2002 (4) | 3                      | Yes                  | 3                    | 3                 | 5                 | 4                 | 4                 | 3                 | 4                 | 3                 | 4                 | 3                 | 5               | 3               | 5               | 46               |
| P3                          | 1    | 445          | 2000-2001 (3) | 4                      | Yes                  | 3                    | 6                 | 6                 | 3                 | 5                 | 4                 | 4                 | 4                 | 4                 | 5                 | 3               | 4               | 5               | 58               |
| P4                          | 2    | 525          | 1999-2000 (2) | 5                      | No                   | Yes                  | 3                 | 4                 | 4                 | 5                 | 5                 | 3                 | 4                 | 4                 | 5               | 3               | 4               | 5               | 4             | 50               |
| P5                          | 2    | 530          | 2000-2001 (3) | 4                      | Yes                  | 3                    | 4                 | 4                 | 3                 | 3                 | 4                 | 5                 | 5                 | 4                 | 4                 | 5               | 4               | 5               | 48               |
| P6                          | 2    | 315          | 2001-2002 (4) | 3                      | No                   | 2                    | 2                 | 3                 | 3                 | 2                 | 3                 | 1                 | 4                 | 4                 | 2               | 4               | 1               | 2               | 31               |
| P7                          | 2    | 847          | 1998-9 (1)    | 6                      | Yes                  | 2                    | 4                 | 4                 | 4                 | 5                 | 3                 | 5                 | 4                 | 4                 | 5               | 4               | 4               | 51               |
| P8                          | 2    | 630          | 1999-2000 (2) | 5                      | Yes                  | 3                    | 5                 | 4                 | 5                 | 3                 | 5                 | 2                 | 2                 | 5               | 1               | 5               | 5               | 5              | 47               |
| P9                          | 4    | 415          | 1998-9 (1)    | 6                      | No                   | 3                    | 3                 | 3                 | 3                 | 5                 | 4                 | 4                 | 3                 | 3               | 4               | 3               | 3              | 5               | 43               |
| P10                         | 4    | 128          | 2001-2002 (4) | 3                      | Yes                  | 2                    | 3                 | 4                 | 4                 | 4                 | 5                 | 5                 | 5                 | 4                 | 4               | 3              | 4              | 37               |
| P11                         | 5    | 831          | 2001-2002 (4) | 3                      | Yes                  | 3                    | 3                 | 3                 | 3                 | 4                 | 4                 | 4                 | 4                 | 3               | 3              | 4              | 3              | 37               |
| P12                         | 5    | 662          | 2001-2002 (4) | 3                      | No                   | 2                    | 2                 | 3                 | 3                 | 3                 | 3               | 4                 | 4                 | 4               | 3               | 5              | 3              | 39               |
| P13                         | 5    | 428          | 1998-9 (1)    | 6                      | No                   | 1                    | 4                 | 5                 | 5                 | 3                 | 4                 | 4                 | 4                 | 4               | 4               | 5              | 5              | 51               |
| P14                         | 6    | 1450         | 1999-2000 (1) | 5                      | No                   | 2                    | 3                 | 3                 | 3                 | 2                 | 3               | 4                 | 4                 | 3               | 3              | 4              | 2              | 27               |
| P15                         | 6    | 796          | 2000-2001 (3) | 4                      | No                   | 2                    | 3                 | 4                 | 3                 | 4                 | 5               | 3                 | 4                 | 5               | 4              | 3              | 4              | 5              | 57               |
| P16                         | 6    | 280          | 2001-2002 (4) | 3                      | No                   | 3                    | 5                 | 5                 | 5                 | 4                 | 5               | 5                 | 4                 | 6               | 4               | 4              | 5              | 5              | 50               |
| P17                         | 7    | 185          | 1998-9 (1)    | 6                      | No                   | 1                    | 3                 | 5                 | 5                 | 3                 | 4               | 4                 | 5                 | 4               | 4              | 5               | 5              | 50               |
| P18                         | 9    | 242          | 1998-9 (1)    | 6                      | No                   | 2                    | 4                 | 4                 | 4                 | 3                 | 3               | 4                 | 4                 | 3               | 3              | 4              | 3              | 3              | 45               |
| P19                         | 9    | 173          | 1999-2000 (2) | 5                      | No                   | 1                    | 5                 | 4                 | 4                 | 4                 | 3               | 4                 | 4                 | 4               | 5              | 4              | 4              | 5              | 50               |
| P20                         | 9    | 483          | 2001-2002 (4) | 3                      | No                   | 4                    | 4                 | 4                 | 4                 | 3                 | 4               | 3               | 4                 | 4               | 3              | 4              | 4              | 4              | 43               |
| P21                         | 9    | 240          | 2001-2002 (4) | 3                      | No                   | 1                    | 3                 | 3                 | 3                 | 3                 | 2               | 2                 | 3               | 2              | 2              | 3              | 2              | 3              | 32               |
| P22                         | 9    | 180          | 2001-2002 (4) | 3                      | Yes                  | 2                    | 4                 | 4                 | 4                 | 3                 | 3               | 3               | 4                 | 4               | 4              | 4              | 4              | 4              | 44               |
## Control Schools Self-Assessment Score Data

<table>
<thead>
<tr>
<th>Control School Assigned Code</th>
<th>LSG</th>
<th>No. Students</th>
<th>SLR/SA</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10/11 Score</th>
<th>Principle 12 Score</th>
<th>Principle 13 Score</th>
<th>Total Score (72)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>1</td>
<td>137</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>1</td>
<td>602</td>
<td>SA</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C3</td>
<td>1</td>
<td>500</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>2</td>
<td>550</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>2</td>
<td>550</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>2</td>
<td>300</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>2</td>
<td>700</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C8</td>
<td>2</td>
<td>721</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C9</td>
<td>4</td>
<td>460</td>
<td>SA</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C10</td>
<td>4</td>
<td>200</td>
<td>SA</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C11</td>
<td>5</td>
<td>800</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C12</td>
<td>5</td>
<td>475</td>
<td>SA</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C13</td>
<td>5</td>
<td>468</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C14</td>
<td>6</td>
<td>1461</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C15</td>
<td>6</td>
<td>1461</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C16</td>
<td>7</td>
<td>357</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C17</td>
<td>7</td>
<td>357</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C18</td>
<td>9</td>
<td>250</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C19</td>
<td>9</td>
<td>186</td>
<td>SA</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C20</td>
<td>9</td>
<td>343</td>
<td>SA</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C21</td>
<td>9</td>
<td>222</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>C22</td>
<td>9</td>
<td>168</td>
<td>SLR</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Quality School Assigned Code</td>
<td>KPI 1 Reading</td>
<td>KPI 2 Writing</td>
<td>KPI 3 Number</td>
<td>KPI 4 Parent Opinion 'General</td>
<td>KPI 5 Staff Opinion 'School Morale'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>--------------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
<td>2005</td>
<td>2003</td>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diff Mean</td>
<td>Diff Mean</td>
<td>Diff Mean</td>
<td>Diff Mean</td>
<td>Diff Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>4.19</td>
<td>0.18</td>
<td>4.07</td>
<td>0.06</td>
<td>4.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.08</td>
<td>0.00</td>
<td>0.08</td>
<td>0.04</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Control Schools Key Performance Indicator Data

| Control School Assigned Code | DPI 1 Reading Mean 2003 | DPI 1 Reading Mean 2004 | DPI 1 Reading Mean 2005 | DPI 2 Writing Mean 2003 | DPI 2 Writing Mean 2004 | DPI 2 Writing Mean 2005 | DPI 3 Numeracy Mean 2003 | DPI 3 Numeracy Mean 2004 | DPI 3 Numeracy Mean 2005 | DPI 4 Science Mean 2003 | DPI 4 Science Mean 2004 | DPI 4 Science Mean 2005 | DPI 5 English Mean 2003 | DPI 5 English Mean 2004 | DPI 5 English Mean 2005 | DPI 6 Maths Mean 2003 | DPI 6 Maths Mean 2004 | DPI 6 Maths Mean 2005 | DPI 7 Percent Opinion General Satisfaction Mean 2003 | DPI 7 Percent Opinion General Satisfaction Mean 2004 | DPI 7 Percent Opinion General Satisfaction Mean 2005 | DPI 8 Staff Opinion ‘School Manager’ Mean 2003 | DPI 8 Staff Opinion ‘School Manager’ Mean 2004 | DPI 8 Staff Opinion ‘School Manager’ Mean 2005 |
|------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| 1.4                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 1.5                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 1.6                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 1.7                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 1.8                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 1.9                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 2.0                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 2.1                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 2.2                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 2.3                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 2.4                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
| 2.5                          | 4.09                    | 3.9                     | 3.57                    | 0.86                    | 0.78                    | 0.63                    | 0.78                    | 0.63                    | 0.78                    | 0.87                    | 0.79                    | 0.67                    | 0.96                    | 0.87                    | 0.79                    | 0.87                    | 0.79                    | 0.87                    | 0.87                    | 0.79                    | 0.87                    |
## Quality Schools Key Performance Indicator Data - Year Prep to 6

### Prep

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10/11</td>
<td>12</td>
<td>43</td>
<td>7.67</td>
<td>3.93</td>
<td>-0.04</td>
</tr>
<tr>
<td>P2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10/11</td>
<td>12</td>
<td>43</td>
<td>7.67</td>
<td>3.93</td>
<td>-0.04</td>
</tr>
<tr>
<td>P3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10/11</td>
<td>12</td>
<td>43</td>
<td>7.67</td>
<td>3.93</td>
<td>-0.04</td>
</tr>
</tbody>
</table>

### Year 1

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10/11</td>
<td>12</td>
<td>43</td>
<td>7.67</td>
<td>3.93</td>
<td>-0.04</td>
</tr>
<tr>
<td>P2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10/11</td>
<td>12</td>
<td>43</td>
<td>7.67</td>
<td>3.93</td>
<td>-0.04</td>
</tr>
<tr>
<td>P3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10/11</td>
<td>12</td>
<td>43</td>
<td>7.67</td>
<td>3.93</td>
<td>-0.04</td>
</tr>
</tbody>
</table>

**Note:** The data table continues with similar entries for other principles.
### Year 2

<table>
<thead>
<tr>
<th>Assigned Code</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10/11 Score</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P6</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P7</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P8</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P9</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P10</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P11</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P12</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P13</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P14</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P15</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P16</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P17</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P18</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P19</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P20</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P21</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
<tr>
<td>P22</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>46.04</td>
</tr>
</tbody>
</table>

### Year 3

...
## Year 4

<table>
<thead>
<tr>
<th>Assigned Code</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10/11 Score</th>
<th>Principle 12 Score</th>
<th>Principle 13 Score</th>
<th>Total Score (72)</th>
<th>Diff</th>
<th>Diff</th>
<th>Diff</th>
<th>Diff</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
</tr>
<tr>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
</tr>
<tr>
<td>Mean 2003</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
</tr>
</tbody>
</table>

## Year 5

<table>
<thead>
<tr>
<th>Assigned Code</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10/11 Score</th>
<th>Principle 12 Score</th>
<th>Principle 13 Score</th>
<th>Total Score (72)</th>
<th>Diff</th>
<th>Diff</th>
<th>Diff</th>
<th>Diff</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
<td>P2</td>
<td>P8</td>
</tr>
<tr>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
<td>P12</td>
<td>P5</td>
</tr>
<tr>
<td>Mean 2003</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
<td>2.90</td>
</tr>
<tr>
<td>Assigned Code</td>
<td>Principle 1 Score</td>
<td>Principle 2 Score</td>
<td>Principle 3 Score</td>
<td>Principle 4 Score</td>
<td>Principle 5 Score</td>
<td>Principle 6 Score</td>
<td>Principle 7 Score</td>
<td>Principle 8 Score</td>
<td>Principle 9 Score</td>
<td>Principle 10/11 Score</td>
<td>Principle 12 Score</td>
<td>Principle 13 Score</td>
<td>Total Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KPI 1 Reading**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KPI 2 Writing**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KPI 3 Number**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Year 6**

**Quality Improvement in Australian Schools**

---

**Page 328**
# Quality Improvement in Australian Schools

## Control Schools Key Performance Indicator Data - Year Prep to 6

### Prep

<table>
<thead>
<tr>
<th>Assigned Code</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10 Score</th>
<th>Principle 11 Score</th>
<th>Principle 12 Score</th>
<th>Total Score (72)</th>
<th>Year Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Year 1

<table>
<thead>
<tr>
<th>Assigned Code</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10 Score</th>
<th>Principle 11 Score</th>
<th>Principle 12 Score</th>
<th>Total Score (72)</th>
<th>Year Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quality Improvement in Australian Schools

### Year 2

<table>
<thead>
<tr>
<th>Assigned Code</th>
<th>Principle 1 Score</th>
<th>Principle 2 Score</th>
<th>Principle 3 Score</th>
<th>Principle 4 Score</th>
<th>Principle 5 Score</th>
<th>Principle 6 Score</th>
<th>Principle 7 Score</th>
<th>Principle 8 Score</th>
<th>Principle 9 Score</th>
<th>Principle 10 Score</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>2.64</td>
<td>2.66</td>
<td>2.63</td>
<td>2.62</td>
<td>2.67</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
</tr>
<tr>
<td>C2</td>
<td>2.59</td>
<td>2.60</td>
<td>2.58</td>
<td>2.57</td>
<td>2.59</td>
<td>2.58</td>
<td>2.58</td>
<td>2.58</td>
<td>2.58</td>
<td>2.58</td>
<td>2.58</td>
</tr>
<tr>
<td>C3</td>
<td>2.68</td>
<td>2.69</td>
<td>2.60</td>
<td>2.61</td>
<td>2.64</td>
<td>2.63</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
</tr>
<tr>
<td>C4</td>
<td>2.77</td>
<td>2.77</td>
<td>2.67</td>
<td>2.68</td>
<td>2.70</td>
<td>2.69</td>
<td>2.69</td>
<td>2.69</td>
<td>2.69</td>
<td>2.69</td>
<td>2.69</td>
</tr>
<tr>
<td>C5</td>
<td>2.64</td>
<td>2.79</td>
<td>2.12</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
</tr>
<tr>
<td>C6</td>
<td>2.65</td>
<td>2.69</td>
<td>2.65</td>
<td>2.64</td>
<td>2.83</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
</tr>
<tr>
<td>C7</td>
<td>2.64</td>
<td>2.66</td>
<td>2.64</td>
<td>2.66</td>
<td>2.48</td>
<td>2.63</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
</tr>
<tr>
<td>C8</td>
<td>2.69</td>
<td>2.66</td>
<td>2.60</td>
<td>2.60</td>
<td>2.69</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
</tr>
<tr>
<td>C9</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
</tr>
<tr>
<td>C10</td>
<td>2.54</td>
<td>2.54</td>
<td>2.54</td>
<td>2.54</td>
<td>2.34</td>
<td>2.54</td>
<td>2.54</td>
<td>2.54</td>
<td>2.54</td>
<td>2.54</td>
<td>2.54</td>
</tr>
<tr>
<td>C12</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.32</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
<tr>
<td>C13</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.47</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
<td>2.57</td>
</tr>
<tr>
<td>C14</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
<td>2.06</td>
</tr>
<tr>
<td>C15</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>C16</td>
<td>2.69</td>
<td>2.66</td>
<td>2.65</td>
<td>2.65</td>
<td>2.83</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
<td>2.64</td>
</tr>
<tr>
<td>C17</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
<td>2.70</td>
</tr>
<tr>
<td>C18</td>
<td>2.60</td>
<td>2.63</td>
<td>2.61</td>
<td>2.61</td>
<td>2.50</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
<td>2.60</td>
</tr>
<tr>
<td>C19</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
<td>2.56</td>
</tr>
<tr>
<td>C20</td>
<td>2.42</td>
<td>2.42</td>
<td>2.42</td>
<td>2.42</td>
<td>2.67</td>
<td>2.41</td>
<td>2.41</td>
<td>2.41</td>
<td>2.41</td>
<td>2.41</td>
<td>2.41</td>
</tr>
</tbody>
</table>

### Year 3
### Year 4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>3.35</td>
<td>-0.08</td>
<td>3.49</td>
<td>0.01</td>
<td>3.47</td>
<td>0.03</td>
<td>3.49</td>
<td>0.06</td>
<td>3.40</td>
<td>0.13</td>
<td>3.48</td>
<td>0.10</td>
<td>3.17</td>
<td>2.79</td>
<td>2.81</td>
<td>2.90</td>
<td>2.89</td>
<td>2.83</td>
<td>2.82</td>
<td>2.82</td>
<td>2.84</td>
</tr>
<tr>
<td>C4</td>
<td>3.00</td>
<td>-0.08</td>
<td>3.06</td>
<td>-0.04</td>
<td>3.03</td>
<td>-0.03</td>
<td>3.01</td>
<td>-0.04</td>
<td>3.00</td>
<td>-0.05</td>
<td>3.01</td>
<td>-0.06</td>
<td>2.89</td>
<td>2.82</td>
<td>2.82</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
</tr>
<tr>
<td>C5</td>
<td>3.02</td>
<td>-0.02</td>
<td>3.04</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.01</td>
<td>3.04</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.01</td>
<td>2.89</td>
<td>2.82</td>
<td>2.82</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
</tr>
<tr>
<td>C6</td>
<td>3.02</td>
<td>-0.02</td>
<td>3.04</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.01</td>
<td>3.04</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.01</td>
<td>2.89</td>
<td>2.82</td>
<td>2.82</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
</tr>
<tr>
<td>C7</td>
<td>3.03</td>
<td>-0.01</td>
<td>3.03</td>
<td>-0.02</td>
<td>3.02</td>
<td>-0.04</td>
<td>2.98</td>
<td>0.00</td>
<td>2.99</td>
<td>0.00</td>
<td>3.00</td>
<td>-0.01</td>
<td>2.89</td>
<td>2.82</td>
<td>2.82</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
<td>2.84</td>
</tr>
<tr>
<td>C9</td>
<td>4.22</td>
<td>0.03</td>
<td>4.22</td>
<td>0.03</td>
<td>4.22</td>
<td>0.03</td>
<td>4.22</td>
<td>0.03</td>
<td>4.22</td>
<td>0.03</td>
<td>4.22</td>
<td>0.03</td>
<td>3.91</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
</tr>
<tr>
<td>C10</td>
<td>3.43</td>
<td>0.07</td>
<td>3.43</td>
<td>0.07</td>
<td>3.43</td>
<td>0.07</td>
<td>3.43</td>
<td>0.07</td>
<td>3.43</td>
<td>0.07</td>
<td>3.43</td>
<td>0.07</td>
<td>3.15</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
<td>2.68</td>
</tr>
<tr>
<td>C11</td>
<td>3.18</td>
<td>0.20</td>
<td>2.89</td>
<td>-0.01</td>
<td>2.90</td>
<td>-0.01</td>
<td>2.98</td>
<td>0.04</td>
<td>3.00</td>
<td>0.05</td>
<td>3.00</td>
<td>0.05</td>
<td>2.72</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
<td>2.25</td>
</tr>
<tr>
<td>C13</td>
<td>3.37</td>
<td>-0.15</td>
<td>3.56</td>
<td>0.02</td>
<td>3.56</td>
<td>0.01</td>
<td>3.33</td>
<td>-0.15</td>
<td>3.55</td>
<td>0.05</td>
<td>3.54</td>
<td>0.04</td>
<td>3.20</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
</tr>
<tr>
<td>C14</td>
<td>2.96</td>
<td>0.01</td>
<td>2.96</td>
<td>-0.08</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.86</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
<tr>
<td>C18</td>
<td>2.96</td>
<td>0.01</td>
<td>2.96</td>
<td>-0.08</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.86</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
</tbody>
</table>

### Year 5

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>3.53</td>
<td>-0.08</td>
<td>3.74</td>
<td>0.13</td>
<td>3.58</td>
<td>-0.04</td>
<td>3.55</td>
<td>-0.01</td>
<td>3.69</td>
<td>0.13</td>
<td>3.51</td>
<td>-0.06</td>
<td>3.49</td>
<td>0.1</td>
<td>3.4</td>
<td>0.1</td>
<td>3.4</td>
<td>0.1</td>
<td>3.4</td>
<td>0.1</td>
<td>3.4</td>
</tr>
<tr>
<td>C5</td>
<td>3.74</td>
<td>0.11</td>
<td>3.69</td>
<td>0.05</td>
<td>3.81</td>
<td>0.17</td>
<td>3.68</td>
<td>0.09</td>
<td>3.67</td>
<td>0.07</td>
<td>3.72</td>
<td>0.12</td>
<td>3.58</td>
<td>0.04</td>
<td>3.7</td>
<td>0.3</td>
<td>3.6</td>
<td>0.1</td>
<td>3.7</td>
<td>0.3</td>
<td>3.6</td>
</tr>
<tr>
<td>C6</td>
<td>3.72</td>
<td>0.09</td>
<td>3.60</td>
<td>0.04</td>
<td>3.68</td>
<td>0.02</td>
<td>3.60</td>
<td>0.01</td>
<td>3.51</td>
<td>-0.09</td>
<td>3.60</td>
<td>-0.01</td>
<td>3.69</td>
<td>0.07</td>
<td>3.65</td>
<td>0.00</td>
<td>3.3</td>
<td>0.1</td>
<td>3.3</td>
<td>0.1</td>
<td>3.3</td>
</tr>
<tr>
<td>C13</td>
<td>3.37</td>
<td>-0.15</td>
<td>3.56</td>
<td>0.02</td>
<td>3.56</td>
<td>0.01</td>
<td>3.33</td>
<td>-0.15</td>
<td>3.55</td>
<td>0.05</td>
<td>3.54</td>
<td>0.04</td>
<td>3.20</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
<td>2.77</td>
</tr>
<tr>
<td>C14</td>
<td>2.96</td>
<td>0.01</td>
<td>2.96</td>
<td>-0.08</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.86</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
<tr>
<td>C18</td>
<td>2.96</td>
<td>0.01</td>
<td>2.96</td>
<td>-0.08</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.97</td>
<td>0.03</td>
<td>2.93</td>
<td>-0.10</td>
<td>2.86</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
<td>2.43</td>
</tr>
</tbody>
</table>
### Year 6

| Assigned Code | Principle 1 Score | Principle 2 Score | Principle 3 Score | Principle 4 Score | Principle 5 Score | Principle 6 Score | Principle 7 Score | Principle 8 Score | Principle 9 Score | Principle 10/11 Score | Total Score | KPI 1 Reading | KPI 2 Writing | KPI 3 Number | KPI 4 Reading | KPI 5 Writing | KPI 6 Number | KPI 7 Reading | KPI 8 Writing | KPI 9 Number |
|---------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| C1            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C2            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C3            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C4            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C5            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C6            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C7            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C8            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C9            | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C10           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C11           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C12           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C13           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C14           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C15           | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A              | N/A        | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          |
| C16           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C17           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C18           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C19           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C20           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C21           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
| C22           | 4                | 4                | 2                | 3                | 2                | 3                | 2                | 2                | 3                | 1                 | 17          | 76           | 52           | 20           | 71           | 52           | 20           | 71           | 52           | 20           | 71           |
### Spreadsheet Legend

<table>
<thead>
<tr>
<th>Legend</th>
<th>Code given to participating school to protect confidentiality</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSG</td>
<td>Like School Group</td>
</tr>
<tr>
<td>No. Students</td>
<td>Number of students enrolled at the school</td>
</tr>
<tr>
<td>QIS Group</td>
<td>Quality in Schools Group participated in</td>
</tr>
<tr>
<td>Years applied (to 2005)</td>
<td>No of years since completing Quality in Schools Training</td>
</tr>
<tr>
<td>Principal Constant?</td>
<td>Has the principal of the school changed since commencing Quality in Schools?</td>
</tr>
<tr>
<td>No. QiS Team Remaining</td>
<td>Number of original members of trained team remaining at the school</td>
</tr>
<tr>
<td>Principle Scores 1-13</td>
<td>Self-assessed score recorded against each principle</td>
</tr>
<tr>
<td>KPI 1 Reading</td>
<td>Reading = Teacher assessment of student progress against CSF Yr 6 PS/Yr 10 SC School Mean - Students at Expected Level</td>
</tr>
<tr>
<td>KPI 2 Writing</td>
<td>Writing = Teacher assessment of student progress against CSF Yr 6 PS/Yr 10 SC School Mean - Students at Expected Level</td>
</tr>
<tr>
<td>KPI 3 Number</td>
<td>Number = Teacher assessment of student progress against CSF Number Yr 6 PS/Structure Yr 10 SC School Mean - Students at Expected Level</td>
</tr>
<tr>
<td>KPI 4 AIM Reading</td>
<td>AIM Reading = Achievement Improvement Monitor Statewide Assessment Yr 5 PS/Yr 7 SC</td>
</tr>
<tr>
<td>KPI 5 AIM Number</td>
<td>AIM Maths = Achievement Improvement Monitor Statewide Assessment Yr4 PS Number/Yr 7 SC</td>
</tr>
<tr>
<td>KPI 6 Parent Satisfaction</td>
<td>Parent Satisfaction = Parent opinion as to 'General Satisfaction' with school</td>
</tr>
<tr>
<td>KPI 7 Staff Satisfaction</td>
<td>Staff Satisfaction = Staff Opinion as to 'School Morale'</td>
</tr>
<tr>
<td>SLR SA</td>
<td>Whether school provided primary data through self-assessment (SA) or Secondary data only by School Level Report (SLR)</td>
</tr>
<tr>
<td>Diff LSG Mean</td>
<td>Difference between school data and state average for Like Schools in that Group</td>
</tr>
</tbody>
</table>
Qualitative Data: Characteristics of an Excellent School - Quality School Responses

Characteristics of an Excellent School

<table>
<thead>
<tr>
<th>Theme</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared/Common Vision/Goals</td>
<td>10</td>
</tr>
<tr>
<td>Leadership</td>
<td>10</td>
</tr>
<tr>
<td>Engaged/motivated/enthusiastic staff</td>
<td>9</td>
</tr>
<tr>
<td>Engaged/motivated students</td>
<td>7</td>
</tr>
<tr>
<td>Teamwork</td>
<td>6</td>
</tr>
<tr>
<td>Focus on improvement/CI philosophy</td>
<td>6</td>
</tr>
<tr>
<td>Supportive environment/culture</td>
<td>5</td>
</tr>
<tr>
<td>Consultation and listening</td>
<td>5</td>
</tr>
<tr>
<td>Focus on students/student centred</td>
<td>4</td>
</tr>
<tr>
<td>Student achievement</td>
<td>4</td>
</tr>
<tr>
<td>Collaboration/cooperation</td>
<td>4</td>
</tr>
<tr>
<td>Happiness/Fun/joy in work</td>
<td>4</td>
</tr>
<tr>
<td>Resource rich</td>
<td>4</td>
</tr>
<tr>
<td>Community of learners</td>
<td>3</td>
</tr>
<tr>
<td>Good communication</td>
<td>3</td>
</tr>
<tr>
<td>Community Involvement/Community</td>
<td>3</td>
</tr>
<tr>
<td>Wellbeing - relationships</td>
<td>3</td>
</tr>
<tr>
<td>All students achieving their personal best/best outcomes for students/value add</td>
<td>3</td>
</tr>
<tr>
<td>Challenging environment</td>
<td>2</td>
</tr>
<tr>
<td>Goal alignment/clear vision, direction, plan</td>
<td>2</td>
</tr>
<tr>
<td>Data driven</td>
<td>2</td>
</tr>
<tr>
<td>High retention (staff and students)</td>
<td>2</td>
</tr>
<tr>
<td>Community involvement/support</td>
<td>2</td>
</tr>
<tr>
<td>Innovation and creativity</td>
<td>2</td>
</tr>
<tr>
<td>Organisation</td>
<td>1</td>
</tr>
<tr>
<td>Belief/high expectations</td>
<td>1</td>
</tr>
<tr>
<td>Respect</td>
<td>1</td>
</tr>
<tr>
<td>Catering for diversity</td>
<td>1</td>
</tr>
<tr>
<td>Celebration and time to reflect</td>
<td>1</td>
</tr>
<tr>
<td>Clear processes in place</td>
<td>1</td>
</tr>
<tr>
<td>Involvement of students</td>
<td>1</td>
</tr>
<tr>
<td>Experienced staff</td>
<td>1</td>
</tr>
<tr>
<td>Sharing good practice</td>
<td>1</td>
</tr>
<tr>
<td>Dedicated/committed staff</td>
<td>1</td>
</tr>
<tr>
<td>High staff morale</td>
<td>1</td>
</tr>
<tr>
<td>Positive, supportive learning environment</td>
<td>1</td>
</tr>
<tr>
<td>Constancy of behavioural expectations</td>
<td>1</td>
</tr>
<tr>
<td>Consistent and agreed processes</td>
<td>1</td>
</tr>
<tr>
<td>Continuous improvement philosophy</td>
<td>1</td>
</tr>
<tr>
<td>School reputation within the community</td>
<td>1</td>
</tr>
<tr>
<td>Variety other than core subjects offered</td>
<td>1</td>
</tr>
<tr>
<td>Professionalism of staff</td>
<td>1</td>
</tr>
<tr>
<td>Cohesive staff</td>
<td>1</td>
</tr>
<tr>
<td>Mutual respect</td>
<td>1</td>
</tr>
<tr>
<td>Effective teaching and learning</td>
<td>1</td>
</tr>
<tr>
<td>Staff retention</td>
<td>1</td>
</tr>
<tr>
<td>Respect for all</td>
<td>1</td>
</tr>
<tr>
<td>Honesty</td>
<td>1</td>
</tr>
<tr>
<td>Time to focus on the important, not urgent</td>
<td>1</td>
</tr>
<tr>
<td>Planning</td>
<td>1</td>
</tr>
<tr>
<td>Documentation</td>
<td>1</td>
</tr>
<tr>
<td>Flexibility of staff</td>
<td>1</td>
</tr>
</tbody>
</table>
Qualitative Data: Characteristics of an Excellent School - Control School Responses

<table>
<thead>
<tr>
<th>Characteristics of an Excellent School</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear purpose and vision</td>
<td>2</td>
</tr>
<tr>
<td>Leadership</td>
<td>2</td>
</tr>
<tr>
<td>Maximised engagement of students</td>
<td>1</td>
</tr>
<tr>
<td>Staff committed to learning and growth</td>
<td>1</td>
</tr>
<tr>
<td>Parent and community involvement</td>
<td>1</td>
</tr>
<tr>
<td>Student involvement</td>
<td>1</td>
</tr>
<tr>
<td>Client involvement</td>
<td>1</td>
</tr>
<tr>
<td>Positive attitude</td>
<td>1</td>
</tr>
<tr>
<td>Sense of fun and expectation</td>
<td>1</td>
</tr>
<tr>
<td>Understood sound standards</td>
<td>1</td>
</tr>
<tr>
<td>Openness</td>
<td>1</td>
</tr>
<tr>
<td>Trust</td>
<td>1</td>
</tr>
<tr>
<td>Teamwork</td>
<td>1</td>
</tr>
<tr>
<td>Respect for all stakeholders</td>
<td>1</td>
</tr>
<tr>
<td>Commitment and hard work</td>
<td>1</td>
</tr>
</tbody>
</table>
## Qualitative Data: Three Key Forces Driving School Improvement - Quality School Responses

<table>
<thead>
<tr>
<th>Three Key Things that Drive School Improvement</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>14</td>
</tr>
<tr>
<td>Leadership</td>
<td>11</td>
</tr>
<tr>
<td>Innovation/new ideas/education initiatives</td>
<td>6</td>
</tr>
<tr>
<td>Shared purpose/vision/goals/goal alignment</td>
<td>6</td>
</tr>
<tr>
<td>Committed/dedicated staff</td>
<td>6</td>
</tr>
<tr>
<td>Need identified (e.g. data, stakeholder feedback)/reason why</td>
<td>5</td>
</tr>
<tr>
<td>Enthusiastic staff</td>
<td>5</td>
</tr>
<tr>
<td>Staff desire for improvement/passion for change</td>
<td>4</td>
</tr>
<tr>
<td>Success/Student success</td>
<td>3</td>
</tr>
<tr>
<td>High expectations</td>
<td>2</td>
</tr>
<tr>
<td>Belief we can always do better/best outcomes for students</td>
<td>2</td>
</tr>
<tr>
<td>Supportive environment/culture</td>
<td>2</td>
</tr>
<tr>
<td>Staff professionalism</td>
<td>2</td>
</tr>
<tr>
<td>Teamwork</td>
<td>2</td>
</tr>
<tr>
<td>Professional development</td>
<td>2</td>
</tr>
<tr>
<td>Shared values</td>
<td>2</td>
</tr>
<tr>
<td>Committed students/students demanding excellence</td>
<td>2</td>
</tr>
<tr>
<td>Planning at all stages of improvement/good planning</td>
<td>2</td>
</tr>
<tr>
<td>Public/community perception</td>
<td>2</td>
</tr>
<tr>
<td>Wanting enrolments to increase</td>
<td>2</td>
</tr>
<tr>
<td>Funding</td>
<td>2</td>
</tr>
<tr>
<td>Stakeholder input</td>
<td>1</td>
</tr>
<tr>
<td>Research/best practice</td>
<td>1</td>
</tr>
<tr>
<td>Student achievement</td>
<td>1</td>
</tr>
<tr>
<td>Feedback</td>
<td>1</td>
</tr>
<tr>
<td>Reflection and continuous improvement process</td>
<td>1</td>
</tr>
<tr>
<td>Student needs</td>
<td>1</td>
</tr>
<tr>
<td>Attention to detail</td>
<td>1</td>
</tr>
<tr>
<td>Student focus</td>
<td>1</td>
</tr>
<tr>
<td>Clear direction/vision</td>
<td>1</td>
</tr>
<tr>
<td>Staff flexibility</td>
<td>1</td>
</tr>
<tr>
<td>Agreed roles and responsibilities</td>
<td>1</td>
</tr>
<tr>
<td>Staff having voice</td>
<td>1</td>
</tr>
<tr>
<td>Processes delivering continuous improvement</td>
<td>1</td>
</tr>
<tr>
<td>Role modelling</td>
<td>1</td>
</tr>
<tr>
<td>Personal goal setting</td>
<td>1</td>
</tr>
<tr>
<td>Attitude to change</td>
<td>1</td>
</tr>
<tr>
<td>Professional standards</td>
<td>1</td>
</tr>
<tr>
<td>Individual motivation</td>
<td>1</td>
</tr>
<tr>
<td>Willingness to improve</td>
<td>1</td>
</tr>
<tr>
<td>Everyone's input heard and respected</td>
<td>1</td>
</tr>
<tr>
<td>Clear, considered implementation</td>
<td>1</td>
</tr>
<tr>
<td>Funding</td>
<td>1</td>
</tr>
<tr>
<td>Principal's willingness to adopt new programs</td>
<td>1</td>
</tr>
<tr>
<td>Bribes</td>
<td>1</td>
</tr>
<tr>
<td>Joy in work</td>
<td>1</td>
</tr>
<tr>
<td>Opportunities</td>
<td>1</td>
</tr>
<tr>
<td>Risk taking/willingness to change</td>
<td>1</td>
</tr>
<tr>
<td>Educational theories</td>
<td>1</td>
</tr>
<tr>
<td>Technology</td>
<td>1</td>
</tr>
<tr>
<td>Well resourced</td>
<td>1</td>
</tr>
<tr>
<td>Enthusiastic students</td>
<td>1</td>
</tr>
<tr>
<td>Outside forces - DET</td>
<td>1</td>
</tr>
<tr>
<td>Lifelong learners</td>
<td>1</td>
</tr>
<tr>
<td>Engagement</td>
<td>1</td>
</tr>
<tr>
<td>Student and staff wellbeing</td>
<td>1</td>
</tr>
<tr>
<td>Press coverage</td>
<td>1</td>
</tr>
<tr>
<td>Learning</td>
<td>1</td>
</tr>
<tr>
<td>Inspired teachers</td>
<td>1</td>
</tr>
<tr>
<td>A belief in doing the best for students</td>
<td>1</td>
</tr>
<tr>
<td>Cooperative learning</td>
<td>1</td>
</tr>
<tr>
<td>Devolved leadership</td>
<td>1</td>
</tr>
<tr>
<td>Focus on improvement</td>
<td>1</td>
</tr>
<tr>
<td>All staff wanting to make a difference</td>
<td>1</td>
</tr>
<tr>
<td>Recognition</td>
<td>1</td>
</tr>
</tbody>
</table>
Qualitative Data:
Three Key Forces Driving School Improvement - Control School Responses

<table>
<thead>
<tr>
<th>Three Key Things that Drive School Improvement</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic programming/planning</td>
<td>2</td>
</tr>
<tr>
<td>Data</td>
<td>2</td>
</tr>
<tr>
<td>Leadership</td>
<td>2</td>
</tr>
<tr>
<td>Attitude of teachers</td>
<td>1</td>
</tr>
<tr>
<td>Empowering the drivers</td>
<td>1</td>
</tr>
<tr>
<td>Through and effective wellbeing program applied</td>
<td>1</td>
</tr>
<tr>
<td>Risk-takers embracing change</td>
<td>1</td>
</tr>
<tr>
<td>Every person taking responsibility for core business of school</td>
<td>1</td>
</tr>
<tr>
<td>Willingness/motivation to make a difference</td>
<td>1</td>
</tr>
<tr>
<td>Professional pride</td>
<td>1</td>
</tr>
<tr>
<td>High expectations</td>
<td>1</td>
</tr>
<tr>
<td>Clear vision</td>
<td>1</td>
</tr>
<tr>
<td>Not sweating the small stuff</td>
<td>1</td>
</tr>
</tbody>
</table>
Qualitative Data:
Three Key Restraining Forces of School Improvement - Quality School Responses

<table>
<thead>
<tr>
<th>Three Key Things that Prevent School Improvement</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget/funding/money/resources/facilities</td>
<td>19</td>
</tr>
<tr>
<td>Time</td>
<td>17</td>
</tr>
<tr>
<td>Fear of/resistance to change/staff negativity/lack of commitment</td>
<td>10</td>
</tr>
<tr>
<td>Overload/Workload</td>
<td>7</td>
</tr>
<tr>
<td>Lack of communication</td>
<td>6</td>
</tr>
<tr>
<td>Amount of change/too much going on/change fatigue</td>
<td>5</td>
</tr>
<tr>
<td>Valuing of education by community/community and parent involvement</td>
<td>5</td>
</tr>
<tr>
<td>Lack of shared purpose/understanding/focus/goal congruence</td>
<td>4</td>
</tr>
<tr>
<td>Lack of skills where needed/understanding/access to professional development/Knowledge</td>
<td>4</td>
</tr>
<tr>
<td>Lack of support/leadership</td>
<td>4</td>
</tr>
<tr>
<td>Staff turnover</td>
<td>4</td>
</tr>
<tr>
<td>Isolated decision-making/staff consultation</td>
<td>2</td>
</tr>
<tr>
<td>Energy/apathy</td>
<td>2</td>
</tr>
<tr>
<td>Behaviour problems</td>
<td>2</td>
</tr>
<tr>
<td>Staff development/training</td>
<td>2</td>
</tr>
<tr>
<td>Different cultural values/demographic factors/environmental factors</td>
<td>2</td>
</tr>
<tr>
<td>Demographic challenges</td>
<td>2</td>
</tr>
<tr>
<td>Unmotivated staff and students</td>
<td>2</td>
</tr>
<tr>
<td>Excessive demands/new requirements from Department</td>
<td>2</td>
</tr>
<tr>
<td>Lack of recognition</td>
<td>1</td>
</tr>
<tr>
<td>Confidence</td>
<td>1</td>
</tr>
<tr>
<td>Stress levels</td>
<td>1</td>
</tr>
<tr>
<td>Rushed implementation</td>
<td>1</td>
</tr>
<tr>
<td>Limited student involvement</td>
<td>1</td>
</tr>
<tr>
<td>Lack of data and understanding of data</td>
<td>1</td>
</tr>
<tr>
<td>Inability to think outside the square</td>
<td>1</td>
</tr>
<tr>
<td>Individual agendas</td>
<td>1</td>
</tr>
<tr>
<td>Differing stages of learning</td>
<td>1</td>
</tr>
<tr>
<td>Poor leadership</td>
<td>1</td>
</tr>
<tr>
<td>More support for special need students</td>
<td>1</td>
</tr>
<tr>
<td>Variation - lack of clarity around process</td>
<td>1</td>
</tr>
<tr>
<td>Lack of commitment to whole school plan</td>
<td>1</td>
</tr>
<tr>
<td>Staff morale</td>
<td>1</td>
</tr>
<tr>
<td>Restrictions on change</td>
<td>1</td>
</tr>
<tr>
<td>Student retention (loss of students to other schools)</td>
<td>1</td>
</tr>
<tr>
<td>Focus on reactive rather than proactive</td>
<td>1</td>
</tr>
<tr>
<td>Lack of teacher effectiveness</td>
<td>1</td>
</tr>
<tr>
<td>Low expectations of students</td>
<td>1</td>
</tr>
<tr>
<td>Leadership succession planning and capacity building</td>
<td>1</td>
</tr>
<tr>
<td>Support from the system</td>
<td>1</td>
</tr>
<tr>
<td>Mindset</td>
<td>1</td>
</tr>
</tbody>
</table>
**Qualitative Data:**
**Three Key Restraining Forces of School Improvement - Control School Responses**

<table>
<thead>
<tr>
<th>Three Key Things that Prevent School Improvement</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers who are blockers/resistance to change</td>
<td>3</td>
</tr>
<tr>
<td>Low expectations of students</td>
<td>2</td>
</tr>
<tr>
<td>Lack of recognition between equity and equality</td>
<td>1</td>
</tr>
<tr>
<td>Processes not being followed</td>
<td>1</td>
</tr>
<tr>
<td>Clear timelines</td>
<td>1</td>
</tr>
<tr>
<td>Role clarity</td>
<td>1</td>
</tr>
<tr>
<td>Department imperatives - rate of change imposed</td>
<td>1</td>
</tr>
<tr>
<td>Time</td>
<td>1</td>
</tr>
<tr>
<td>Doing too much/overload</td>
<td>1</td>
</tr>
<tr>
<td>Resources/funding</td>
<td>1</td>
</tr>
<tr>
<td>Staff retention</td>
<td>1</td>
</tr>
<tr>
<td>Maintaining morale and motivation</td>
<td>1</td>
</tr>
<tr>
<td>Getting people on board</td>
<td>1</td>
</tr>
</tbody>
</table>