

Data Driven Decision Making
and the
New Zealand Secondary
School Principal

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Declaration

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This Dissertation Project entitled Data Driven Decision Making and the New Zealand Secondary School Principal is submitted in partial fulfilment for the requirements for the Unitec degree of Master of Educational Leadership and Management.

CANDIDATE'S DECLARATION

I confirm that:

- This Dissertation Project represents my own work;
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.
Research Ethics Committee Approval Number: 2009.981 27 June 2009.

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Abstract

In an age of expanding educational accountability driven by pressures to lift student achievement the role of Data Driven Decision Making (DDDM) within schools has escalated. In a New Zealand context the 2001 Education Standards Act signalled an expectation that schools were required to make greater use of data in their reporting and planning is an indication of this. Within this environment, however, literature suggests that for various reasons skilful data analysis to inform school decision making is a leadership tool that is generally not well understood or applied. Such a premise has various implications because the secondary school principal is expected to be a pedagogical leader and is often required to fit any reforms such as improving data capacity in to a spectrum of several other reforms that can be simultaneously in motion. This can cause fragmentation and dislocation which can also jeopardise the sustainability of educational reform. Responding effectively to lift school data capacity is therefore a challenge that New Zealand secondary school principals could currently face.

The main objective of this dissertation is to contribute to the knowledge base of how New Zealand secondary school principals are applying practices of DDDM to improve student outcomes. Principal views of the purported benefits of DDDM as well as the barriers that can hinder establishing greater school data capacity are examined. DDDM views and practices of principals in regard to the Revised New Zealand Curriculum are also a feature of this research.

Five secondary school principals from the same region in New Zealand were interviewed about their DDDM perspectives and also the DDDM practices that they were seeking to implement. The research highlighted that the principals shared similar views about the benefits of DDDM and also similar frustrations in their attempts to translate DDDM theory in to practitioner practice. It is hoped that these findings may benefit secondary school principal leadership by providing a critical base for secondary schools principals to clarify their understanding of how DDDM could be

used to improve learning and raise achievement in the secondary schools that they lead.

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Table of Abbreviations used in dissertation

Abbreviation	Full form
AsTTle	Assessment tools for learning and teaching
AYP	Adequate yearly progress
DDDM	Data driven decision making
ERO	Education Review Office
ESEA	Elementary and secondary education act
HOD	Head of department
HODs	Heads of departments
MOE	Ministry of Education
NAGs	National administration guidelines
NCEA	National certificate of educational achievement.
NCLB	No child left behind
NEGs	National education guidelines
PAT	Progressive achievement test
STAR	Supplementary tests of reading and achievement

Chapter One – Introduction

Data Driven Decision Making and Education

The use of data to inform decision making is an established tool for leaders of business and industry (Picciano, 2006; Streifer, 2004). For educational leaders, however, data to inform decision making is a tool that was largely left on the educational leadership shelf and has just recently been dusted off, remodelled, and updated to meet the upsurge in educational accountability demands that have prevailed over the last decade. Hess (2008) alludes to this situation:

A decade ago, it was disconcertingly easy to find education leaders who dismissed student achievement data and systematic research as having only limited utility when it came to improving schools or school systems. Today, we have come full circle. It is hard to attend an education conference or read an education magazine without encountering broad claims for data-based decision making and research-based practice. (p.12)

In just over a decade, as Hess contends, DDDM in education has been promoted from the role an extra to that of a leading actor. In most developed countries schools are now expected to use data to inform their decision making to improve student achievement. Furthermore, educational governing authorities through various legislative mechanisms have increasingly sought to hold schools more accountable for how they use data to improve student achievement (Bernhardt, 2004; Kowalski, Lasley & Mahoney, 2008; Picciano, 2006; Streifer, 2004).

Marketisation and standardisation were key educational themes of the 1990s and were central to the groundswell of opinion that called for more accountability in education (Hargreaves, 2008). The United States federal No Child Left Behind (NCLB) legislation of 2001 added considerable momentum to the educational accountability movement, and further propelled the growing expectation that schools increase their capacity to engage in DDDM to raise student achievement (Hoy & Miskel, 2005).

DDDM in New Zealand secondary schools

Similarly in New Zealand the capacity of data to inform instruction and improve achievement was promoted by the government's educational policy division, The Ministry of Education (MOE). The legislating of the 2001 Education Standards Act clearly signalled this. The Act established the expectation that from 2003 schools were to use student achievement data in the setting and reporting of annual student achievement improvement targets. These targets, supported by action plans became part of the school charter. Through an analysis of variance the Board of Trustees was required to provide data driven responses to explain the possible reasons for why their targets were either achieved or not achieved, and also identify strategies informed by data that could be implemented to improve student achievement in the targeted areas (MOE, 2003).

Boards of Trustees were expected to embrace the theory of the legislation and raise the bar of school data capacity. In the literature review of this research I will discuss how this legislation was posited in the larger school governance reforms of Tomorrow's Schools (Minister of Education, 1988). This will enable the reader to gain a clearer perspective of educational policy development, implementation, and the monitoring of that policy in a New Zealand educational framework. It may also enable the reader to gain a greater understanding of the tensions that a New Zealand secondary principal could experience in their attempts to act on the government mandate to improve school data capacity.

Research Rationale

The legislated expectation that Boards of Trustees through the principal use DDDM practices to improve student achievement has been a feature of the New Zealand educational landscape for nearly a decade. However, it is largely unknown how these practices are being applied at the secondary school principal level.

To a large extent this research is motivated by personal interest in how secondary school principals are using a DDDM approach to improve student learning and raise

achievement. This interest has arisen through my experience as a current New Zealand secondary school principal, and previously a deputy principal of two New Zealand secondary schools. During my twelve years of senior school leadership (1998 -2010), I have participated in four Education Review Office (ERO) school reviews that had a familiar theme in the section of areas for improvement. Each of these reported the need to more effectively use data to inform instruction and improve achievement. The words may have changed but the underlying theme pervaded.

In conversations with principal colleagues it became apparent that improving school data capacity to inform instruction and improve achievement was an oft repeated theme. These leadership observations through experience significantly shaped my thinking towards this research topic and to a large extent framed my decision to write this dissertation.

Research Aims

The leadership lives of secondary school principals have become increasingly complex in an age of proliferating school reform (Fullan, 2001; Hargreaves, 2009). Over the last decade DDDM to improve student learning and raise achievement is just one of the many reforms that New Zealand secondary school principals have been required to lead. Seeking to understand how secondary school principals in a background of escalating school reform actually view the importance of DDDM to improve student learning and raise achievement is the first aim of this research and this has been translated into the research question: Why is DDDM important for improving learning and raising achievement in secondary schools? Linked to this is the second aim of the research which seeks to examine the barriers that that New Zealand secondary school principals may encounter in seeking to raise school DDDM capacity. Are these challenges unique to DDDM, or are they part of the bigger educational leadership challenge of translating educational theory in to practitioner practice? This second aim leads on to the research question: What barriers and opportunities do principals of secondary schools currently face in applying principles of DDDM to improve learning and raise achievement? The third and final research

aim is to further clarify secondary school principal DDDM understanding by linking it to arguably the most significant educational reform that New Zealand principals currently face: The Revised New Zealand Curriculum. This leads on to the research question: In relation to the New Zealand curriculum what are the implications for secondary school principals in applying principles of DDDM to improve learning and raise achievement? It is intended that the research conducted around these three aims and questions will contribute to the partial filling of a gap that I believe currently exists in New Zealand educational research.

Research Context

The intent of this research is to gain an understanding of the DDDM views and practices of the participants. An interpretive qualitative research methodology was selected because it enabled the focus to directly stay with the participants and sought to comprehend how they viewed and interpreted the world around them.

I interviewed five secondary school principals to gather the data that underpins this research. The sample was drawn from a group of secondary school principals in a geographical region incorporating five urban areas of a population of 15,000 or more. Participants were not selected on the basis of their experience; nevertheless, all of the participants who accepted the invitation were relatively new secondary school principals. All five participants had completed the first time principals' course.

Dissertation structure

This chapter review is provided to assist the reader navigate their way around this dissertation.

Chapter one provides a context for the research problem and seeks to align New Zealand educational DDDM experience with overseas educational DDDM experiences. A further point of focus is the attempt to position New Zealand DDDM reform within the larger frame of the educational governance reform of the 1990s. The rationale, aims, and context for this research are also discussed.

Chapter two provides a comprehensive review of the literature pertaining to DDDM and also the principal leadership tensions that can be evident in seeking to effect DDDM change. Central to this literature is a discussion of the economic and political levers that have contributed to the positioning of DDDM as arguably an expected educational leadership decision making tool. From a New Zealand secondary school principal context the chapter seeks to align DDDM New Zealand educational thinking to the political changes that were ushered in with the 1988 Tomorrows Schools' policy document and the 1989 Education Act. The impacts of principal leadership in regard to leading learning both in a wider context and also a specific DDDM context are also discussed as are the tensions of leading learning and the organisational changes that can be associated with this. Finally the chapter discusses the challenges that principals may encounter in seeking to lift school DDDM capacity that is also aligned with the learning directions of the 2008 Revised New Zealand Curriculum.

Chapter three presents the methodological approach that underpinned this research. A justification of the methodological approach is offered as well as the research design. Explanations of the applied method are also discussed. Issues of reliability and validity are addressed together with relevant ethical considerations.

Chapter four presents the themed data that was gathered from the five semi - structured interviews. Six related themes emerged from the data, these were: DDDM is a valued tool to improve learning and raise achievement, summative data dominates the secondary school landscape, the issue of theory to practice, distributing DDDM professional leadership, DDDM and the tension of workload and perspective, and the uncertainty of DDDM and the Revised New Zealand Curriculum.

Chapter five analyses the data that was presented in chapter four. Where appropriate, the analysis of this data is linked to themes of literature that were discussed in chapter two. This highlights the congruence of the themes that emerged from the data with the themes of literature.

Chapter six is a synthesis of the key themes and issues that emerged from this dissertation, and presents them for final discussion. A set of recommendations are offered to address the issues that this research has highlighted. Possible limitations of this research are also discussed.

Chapter Two – Literature Review

Introduction

This chapter reviews literature pertinent to DDDM in an educational context. Initially this chapter will discuss some of the political and economic levers that have contributed to locating DDDM in its current educational setting. The review aims to position the literature in a New Zealand educational setting and will critically examine the role that the literature promotes of DDDM being an instructive and arguably necessary tool to inform the decision making of school leaders to improve student learning and raise achievement. The barriers that school leaders confront in implementing principles of DDDM to inform their decision making are also discussed. Finally the possible role of DDDM to improve student outcomes relevant to the Revised New Zealand Curriculum is examined.

Data driven decision making

Picciano (2006) contends that the “simplest definition of DDDM is the use of data analysis to inform, when determining courses of action involving policy and procedures” (p.6). In a school context Streifer (2002) defines DDDM as the process of “selecting, gathering, and analysing data for school improvement or student achievement problems and challenges and acting on those findings” (p.8). Luo and Childress (2009) explain that DDDM in education is about the selecting, collecting, and analysing relevant data for the purpose of understanding school challenges, devising alternatives for these challenges, estimating outcomes, and choosing preferred alternatives.

Streifer (2004) and Picciano (2006) argue that complex organisations have for some time realised that organisational capability to make improvements in their performance is determined by having a clear understanding of their current level of performance. They both contend that DDDM is a practice that promotes a disciplined

philosophical approach to data management for the purpose of organisational improvement. Furthermore, they both assert that DDDM has its origins grounded in the corporate world of industry and business and is now seeking to gain a firmer footing in the world of education

The transition of DDDM from the corporate world to the educational world

Principles of DDDM to guide decision making have for some time been the accepted norm by many leaders in the corporate world. Picciano (2006) claims that many sections of the business and industrial world as well as sectors of the government entered the age of information in the 1970s and 1980s. Leaders in these areas began to utilise appropriate technology to categorise relevant data to disclose trends that revealed the most profitable pathway to pursue. He argued that the information age fuelled by digital computer technology has over the last 50 years become an indispensable tool to guide leadership decision making in business and in industry.

Streifer (2002) contends that the corporate world has used information technologies to apply case based approaches in various situations to decision making that can often be quantified down to a proceed, or do not proceed situation. He points to the insurance industry and actuarial science to illustrate the significance of data to inform decision making through the use of complex statistical techniques to set both premium and pay out rates for various policies.

Luo and Childress (2009) also contend that DDDM has been practiced for literally decades in most businesses and industries. They argue that DDDM originated from business management models and that the thinking of DDDM significantly contributed to the United States 2001 federal No Child Left Behind (NCLB) legislation.

Writers concur that historically the practice of DDDM in education has not kept pace with DDDM in the corporate world. Streifer (2002) makes the point that although corporate America had been using DDDM for decades, in the administrative world of school leadership, it is still very much an emerging field. In 2009 however, there is evidence to suggest that a heightened awareness of the power of data to inform

school decision-making has become an expected educational leadership practice (Reeves, 2008). Popham (2008) argues that regardless of this heightened awareness, it appears that many American educators have yet to travel from the legislative and theoretical side of DDDM to the practical application side of DDDM. He suggests that it is not the lack of data that burdens a large number of American educators but the lack of the capacity to convert data in to useable knowledge that is able to effectively inform educational decision-making so that educational outcomes for students are improved.

Economic and political levers position DDDM in education

Various economic and political forces have been key levers in elevating the importance of how educational leaders view DDDM as a tool to improve student outcomes. Political and economic forces have combined to transition DDDM from the background to the foreground of educational leadership decision making (Muo & Childress 2009; Piciano 2004; Streifer 2002).

Discussing education in the United States during this era provides readers with a considerable researched framework to appraise and contrast their own understanding and experience of how DDDM has gained impetus amongst policy makers and practitioners both internationally and within New Zealand. The increased centralised federal and state control articulated by their spirited promotion of standardised testing as the antidote to nurse back to health the supposed frailties and ailments of compulsory education placed DDDM more under the microscope as being a key tool of school reform. Nichols and Berliner (2007) in their criticism of high stakes testing trace the origin of the disenchantment of compulsory education in the United States to the 1965 authorisation of the Elementary and Secondary Education Act (ESEA). This act shifted the focus of what Hargreaves (2008) refers to as the “First Way,” which was a period of optimism and innovation (60’s and late 70’s), to a period that he refers to as the “Interregnum” where creeping centralisation in education became the prominent theme.

In a long term study of eight high schools in the United States and Canada spanning a period of three decades Hargreaves (2008) coins the terms optimisation and innovation, complexity and contradiction, and standardisation and marketisation to describe three significant periods of change that the schools passed through. It is the second and third phases of change that Hargreaves refers to which are closely connected to the forward motion of DDDM in to the educational arena.

Hargreaves (2008) refers to the late 70's to the mid 90's as a period of complexity and contradiction whereby a declining economy seemed to decrease the innovative zeal of the 60's and 70's and shifted the focus to market-driven competition amongst schools. He expressed the view that common educational standards and assessments were popularised by policy makers and gained steadfast traction in the minds of policy makers during what Hargreaves refers to as the "Second Way." This is also supported by Piciano (2006) who also states that increasing centralised control and a greater emphasis of standards and testing became key educational themes in the 1990s.

This pathway was promoted as providing the best remedy to address what many policy makers viewed as the declining relevance and effectiveness of education at the compulsory school level (Nichols & Berliner, 2007). Hargreaves (2008) was critical of the role of standardising education through things such as high stake testing, scripted curriculum content, political targets and timetables for improving results. Fear, force, prescription, competition and intervention clearly signposted the improvement school pathway that policy makers were promoting. Hargreaves (2008) refers to the Third Way or a period of post standardisation in response to the new educational demands that writers such as Bolstad and Gilbert (2007) argue are required for the knowledge economy of the 21st century. In many case schools are unable to jettison the standardisation targets that according to Hargreaves can have a limiting effect on the quality, depth, and breadth of student learning. Hargreaves (2009) writes:

Too many teachers today are constrained to concentrate on tested literacy and mathematics – marginalising other areas of the curriculum such as social studies, the environment or the arts. Demanding that schools be data driven

leads many of them to concentrate only on the tests in cultures of anxiety about instant results. (p.39)

In reference to ESEA, Nichols and Berliner (2007) argue that the minimum competency tests advocated enabled centralisation and standardisation to figure with greater force on what was increasingly promoted as best practice. In their view policymakers in general advocated this as the preferred pathway that would enable America to modernise education and provide the country with the platform to gain the competitive advantage that they were seeking. Education's perceived under-performance according to Nichols and Berliner (2007) was made a scapegoat for an underperforming American economy. This situation was highlighted because the international economy unlike the national economy was experiencing a period of positive growth. The American educational concerns of the 1970's culminated in the 1983 release of the paper *A Nation at Risk* by the National Commission of Excellence in Education which predicted that unless public education received a major overhaul the nation's economic security would be severely compromised.

As intended, the paper put education further under the microscope and various political initiatives were enacted to improve America's purported ailing education system. Nichols and Berliner (2007) argue that the failings of the education system that the paper promulgated spawned panic and created a myth about the lack of learning and achievement of American schools:

In fact, hysteria about the achievements of our schools was, and continues to be, largely a myth. But the myth lives on, and policies follow from the myth as surely as from factual accounts about the way the world works. Despite its mistaken factual claims, after publication of a Nation at Risk, many politicians aligned with a growing public demand to improve the "failing" educational system. As a result, the past 20 years have seen a broad range of policy documents and initiatives offering ways of solving America's educational problems; among these was a call for more consequential testing. (p.4)

The role of high stakes testing in America took on a more prominent role with the passing of NCLB, which was passed in 2001 and signed into law in 2002. This act signalled that the federal government was taking a more prominent and direct role in

school reform. The act required all states to establish rigorous academic standards and to conduct annual assessments at specific grade levels with at least a 95% participation rate and to implement a comprehensive accountability system that included extensive data collection and public reporting on student and school performance. Student achievement data and the expectation for schools to use this data to improve student learning and achievement became a key criteria for the evaluation of school effectiveness (Hoy & Miskel, 2005).

One particular provision of the legislation required states to take up a structure of accountability whereby students, teachers, administrators, and schools were evaluated yearly on the basis of students' standardised test performances. Schools were expected to reach prescribed standards and to make sufficient adequate yearly progress (AYP). Significant sanctions hung over those schools that were unable to demonstrate appropriate gains in student achievement. Often the consequences were linked to funding which exacerbated the pressure placed on schools to ensure that they showed a sufficient level of AYP.

The legislation also paved the way to establish new qualification requirements for teachers beyond the standards that were previously established. States were expected to develop an aligned educational structure of content standards (what students are expected to know and be able to do), presentation standards (levels of achievement in a subject area), and a system of mandatory state-wide assessments. The legislation required students to be assessed in state-wide assessments in reading, mathematics, and science. The legislation set the goal that all students would be proficient in these subject areas by 2014 (Nichols & Berliner, 2007).

It is not an intention of this paper to critically evaluate the state of progress of the NCLB legislation but instead to establish a link between the legislation and the transition of DDDM from being viewed as a promising extra to arguably that of a lead role in school improvement. Political and economic drivers in combination with NCLB legislation have transitioned DDDM to be a key driver in the field of school improvement in the United States. Arguably it is the blending of these factors and the

drive from the policy makers to make teachers and schools more responsible for school improvement that have significantly contributed to American educational researchers being the most prolific writers on the topic of DDDM and educational leadership (Muo & Childress, 2009). The expectation for DDDM to influence principal decision making and NCLB legislation is further emphasised by Kowalski et al., (2008) who express the view that “More than any other single policy or law, NCLB has visibly amalgamated directed autonomy, data driven decision making, and school leadership” (2008, p.8). They further argue that federal and state policies required educators to base their decision making on rational models informed by empirical evidence rather than personal bias, emotion, and political expediency that they contend prevailed in the past.

DDDM in the New Zealand policy context

Although the demands in New Zealand by policy makers for teachers and schools to accept more vigorous accountability mechanisms to improve student learning and raise achievement have not risen to the levels of what Nichols and Berliner (2007) refer to as educational policy driven by hysteria, panic, and myth about the purported failings of the American school system, there nevertheless has been a raised expectation for educational accountability in regard to improving student achievement. Similarly as it did in the United States this expectation has given momentum to the power of data to positively inform decision making to improve educational outcomes. The expectation that school leadership demonstrate a greater understanding of DDDM to improve student learning and raise achievement has become an expected feature of best practice in New Zealand schools (ERO, 2007; MOE, 2003).

Tomorrow's Schools

The expectation of schools to demonstrate greater DDDM capacity is monitored by the Education Review Office (ERO) and the Ministry of Education (MOE) who report directly to Parliament regarding education. The creation of the ERO and the redefining of the MOE can be traced to the educational reform that swept New

Zealand schools towards a self management model at the end of the 1980s. This educational reform can be viewed as a New Zealand experience of what Hargreaves has referred to as the interregnum. In the 1980s there was generally a growing dissatisfaction of schools being administered by an extensive centralised bureaucracy that was perceived by many as lacking the flexibility to be more responsive to parents and their local community (Baker, 2002). The philosophical birth of self managing schools in New Zealand is founded mainly on two 1988 policy documents – Tomorrows Schools and the Picot Report (Picot, 1988). The 1989 Education Act was the formal implementation of the self managing philosophies that were promoted by these policy documents.

Previous institutional educational structures that were considered to be outdated were replaced by a self management governance system based upon rational principles of accountability and responsibility that were linked transparently to policy decisions. The general political background embraced free market economics and promoted minimising state intervention. Education was represented as just another commodity in the market place and institutional structures were pursued that minimised state intervention and escalated the intervention of the school's local community. Leane (2000) describes the reforms as orchestrating arguably the most detailed and dramatic transformation ever undertaken by an industrialised country of their compulsory education sector.

The Tomorrow's Schools (Minister of Education, 1988) administrative reforms were also intended to progress student learning and raise achievement by improving parental involvement in schools, making schools more responsive to the local community, and making teachers and school leaders more accountable. At the school level this was to be facilitated through the election of a Board of Trustees responsible for the effective management of the school. It was the responsibility of the Board of Trustees to meet the legal requirements of the Education Act and the associated National Education Guidelines. The legislation transferred the responsibility from the state to the Board of Trustees to employ teachers and the school principal to whom they delegated the management of the school which included being responsible for

the performance of the teachers, the effective implementation of the curriculum, and for managing the property and finances of the school.

Ministry of Education and the Education Review Office

The MOE function was tapered to one of supplying government policy guidance, national curriculum objectives, monitoring current policy, and allocating and mediating formula driven resource allocation. The mandatory inclusion of school charters that were authored by Boards of Trustees were benchmarked to the National Educational Guidelines (NEGs) and National Administration Guidelines (NAGs). The school charters provided an important link between the MOE and the school Board of Trustees. The charter provided a core programme of outputs that the newly created ERO who replaced the previous school inspectorate could be used to evaluate the quality of education of school (Baker 2002; Leane 2000; Wylie 1999).

Evaluating and reporting publicly on the education and care of students in New Zealand schools and early childhood services was designated to the newly formed ERO. Three yearly reviews and reports on the quality of education were the main mechanisms that the ERO used to assure the government of their investment in education. The publication of the reviews informed parents and communities about the quality of education. School boards of trustees and educational staff were expected to use ERO reviews to inform their planning to improve the quality of education.

The reviews acted as a strong accountability mechanism and although censures were not as severe as those advocated by NCLB legislation they nevertheless could have a significant impact on how a school is viewed by their community. It could be argued therefore that ERO reviews can have a direct impact upon student enrolment. It is student enrolment which determines the government provided school operation grant to fund education (Leane, 2000).

Education Standards Act (2001)

Another core task of the ERO is to assist the government to assess the programmes and the impacts of new education policy and direction that have been advised and supported by the MOE. The tide of educational awareness in New Zealand of DDDM as an expected practice to inform decision making gained momentum with the changes that were legislated in the 2001 Education Standards Act. The Act mandated a new planning and reporting component that Boards of Trustees were required from 2003 to include in their charter.

In 2003 and 2004 the MOE published the Planning for Better Student Outcomes documents which were designed to assist school Boards implement the planning and reporting changes that were required in their charter. From 2003 school charters were required to include a strategic plan which articulated the long-term board goals for student achievement as well as an annually updated section which identified the immediate student achievement improvement targets that were supported by a framework for reporting progress towards achieving school improvement targets.

The role of the principal is critical in formulating the strategic plan of the school charter. A school strategic plan sets the Board of Trustees priorities and strategies to raise student achievement over three to five years. The government expected the new planning process to assist all schools adopt a continuous improvement culture that was based on an annual process of self review. Through this planning process all schools were expected to: gather comprehensive student achievement data, use this data to identify specific target areas for improvement, implement programmes to lift performance in the target areas, and report the progress made to lift performance to the MOE and their school community (MOE, 2003).

It was in this increased accountability environment for education that DDDM began to emerge in New Zealand as a tool that schools were expected to use to inform their decision-making to improve student learning and raise achievement. A challenge for the MOE and the ERO in regard to the legislative changes that were enacted by the 2001 Education Standards Act was not only to provide tools to assist Boards of

Trustees develop their capability to use data to inform their decision-making, but also to convince them, that a data driven pathway would deliver the improved student outcomes that policy makers espoused.

DDDM and principal leadership

DDDM literature in an educational setting is mainly related to principal leadership in an American context; however, the themes to a large extent appear to be familiar with the DDDM experiences of some New Zealand secondary school principals. In the United States Popham (2008) referred to data overload being a barrier to effective principal decision making, and similarly Reeves (2008) refers to the data position of most American school leaders being in a submerged state and are drowning in a flood of data. No doubt the NCLB legislation and the supporting frameworks had elevated the expectation of data accountability yet many educators were struggling to use the data to make a meaningful difference in the learning and achievement of students (Popham,2008; Reeves,2008). Why in 2009 is DDDM still according to literature, struggling, and in many cases stalling in its attempt to cross the bridge that connects the side of DDDM theory to the more meaningful side of practitioner reality?

Popham (2008) identifies two barriers that typically prevent educators from realising the instructional potential that student data offers. He refers to these barriers as a missing realisation and a missing skill. For missing realisation Popham (2008) makes reference to data of students' annual test scores that are returned to schools in the form of reporting clusters. The reporting clusters are collections of student performances in areas that often lack a collective theme and make it extremely difficult for data to be converted in to actionable data to inform instruction. In an environment of data overload, principals and other school leaders Popham (2008) advocates need to realise that not all test scores are in fact worthy of serious analysis. "Many test scores seem to have been collected mindlessly: even a careful analysis of those scores fails to reveal how an educator might use them to make an educationally defensible decision" (p.85).

The second barrier that Popham (2008) identifies is that which he refers to as a missing skill. Educators need to possess the skill of distinguishing between data that informs educational decisions and data that does not. Both skills that Popham (2008) identifies form a firm foundation of understanding for principals to further develop their understanding of how DDDM can impact upon their leadership practices.

Reeves (2008) refers to observations that he carried out in three school districts to emphasise the variability of principal capacity to use DDDM. In the first school that he visited he discovered that the principal had left more than a ream of paper containing student assessment data still shrink-wrapped in plastic in his office where it had lain untouched for several months. In the second district he conducted interviews with a focus group of 15 principals and found that 14 of the principals had confessed to never having used the data provided from the multi-million dollar data warehouse that the district had purchased. In the third district Reeves found that teachers were choosing to manually record every test score and demographic characteristic to discuss at data analysis meetings rather than use the advanced technology for downloading and data analysis that the district had purchased.

Research published by the ERO in 2007 suggests that similarly to the research conducted by Popham (2008) and Reeves (2008) many New Zealand principals were also struggling to apply the ideology of DDDM in their leadership practices. The research was based on reviews that the ERO carried out in 314 schools during the first half of 2006. The extent to which schools were using student achievement data to inform their planning as required by the planning and reporting changes of the 2001 Education Standards Act was the primary aim of the research. The research was published in two separate books: *The Collection and Use of Assessment Information in Schools (March 2007)*, and *The Collection and Use of Assessment Information: Good practices in Secondary Schools (June 2007)*. The research indicated that many schools were in fact struggling to implement principles of DDDM to inform their planning:

Many teachers and school managers found the process of analysing and interpreting the results of students' assessment activities difficult and challenging. ERO found a widespread need for school personnel to improve their data literacy – their ability to analyse both numeric and narrative assessment information accurately and proficiently and interpret the results so that they are understood by all potential users of the information including trustees, school managers, teachers, students, parents and the schools' communities. (ERO, p. 47, 2007)

The impact of principal leadership

The role of Principal leadership in transitioning the school to a DDDM pathway to improve educational outcomes is pivotal. Educational research clearly correlates a positive relationship between Principal leadership and improved student outcomes. Sparks (2005) writes:

Leaders matter. What leaders think, say, and do – and who they are when they come to work each day – profoundly affects organizational performance, the satisfaction they and those with whom they interact derive from their work, and their ability to sustain engagement with their work over the period of time necessary to oversee significant improvements. Leaders' thoughts and actions shape the culture of their organizations and set the direction and pace for the professional learning that is essential in improving organizational performance (p vii)

In schools, leaders do matter; however, there is still a significant amount of debate about the type of leadership that really counts in a school situation. The recent work of Viviane Robinson and others as part of the New Zealand Ministry of Education's *Best Evidence Synthesis on School Leadership* (2009) provides an evaluative framework to provide possible answers to this question. The meta-analysis research seeks to identify the particular principal leadership practices that make a positive difference to student outcomes.

A question of whether school leaders make a positive difference to student outcomes was conducted through a meta-analysis conducted by Mazarno (2005). He correlated an effect size of .25 between the leadership behaviour of the principal and student average academic achievement. Hattie (2001) contends that an effect size of 0.4 or better should be considered as the benchmark to evaluate whether a particular

practice is having a positive effect on student learning and achievement. Robinson (2007) advocates that generally an effect size between 0 and 0.2 has virtually no effect on improving student learning and achievement; between 0.2 and 0.4 as minimal and perhaps educationally insignificant; between 0.4 and 0.6 as having a moderate educationally significant effect, and greater than 0.6 as having a large educationally significant effect. Mazarno's (2005) 0.25 effect size link to the issue of whether school leaders do make a difference raises serious issues about what appears to be the negligible impact that school leaders are actually have on effecting improved student outcomes.

Robinson, Hohepa, and Lloyd (2009) contend that potentially school leaders can have a significant impact on student outcomes if certain leadership dimensions are part of their leadership practice. The five leadership dimensions that the research identifies as having the most impact on student outcomes with their relevant effect size are: Establishing goals and expectations (.35), strategic resourcing (.34), planning coordinating and evaluating teaching and the curriculum (.42), promoting and participating in teacher learning and development (.84), Ensuring an orderly and supportive environment (.27). The main thrust of the synthesis is:

Our primary conclusion is that pedagogically focused leadership has a substantial impact on student outcomes. The more leaders focus their influence, their learning, and their relationships with teachers on the core business of teaching and learning, the greater their influence on student outcomes. (Robinson et al., 2009, p.40)

The tensions between pedagogical leadership and workload

For a principal to become the pedagogical leader that Robinson (2009) promotes, however, they often have to overcome the significant challenges that are linked to ever expanding agendas and the tensions that can often be caused by workload and perspective. It is important that school leadership avoid becoming what Fullan (2001) refers to as "victimised by innovation overload" (p 21). Fullan further argues that the principal leadership role has altered as a result of such increasing demands "the

advent of site-based management across the world, more and more onus for initiative has landed at the principal's doorstep. Principals are now expected to lead change, and thus they have become a critical source of initiation" (p.59).

Within the change environment that principals and school leadership exist in, it is crucial that quality professional learning experiences be provided for school leaders that enable them to focus on those things that according to Robinson (2007) really make the difference to student outcomes. Robinson (2007) refers to data from a New Zealand Trends in Maths and Science Study which showed that New Zealand principals of Year 5 and Year 9 students spend 50% of their time on administration tasks. This figure exceeded international comparisons by more than 20% and suggests that New Zealand principals spend less time on pedagogical leadership (defined as developing curriculum and pedagogy) than their international colleagues. As Robinson (2007) argues "there is a clear misalignment between these data and the evidence about how leaders make a difference to students" (p 10).

The challenges of principal leadership in New Zealand to become the pedagogical leader that will bring the most productive gains for student achievement are also accentuated by a report that examined the stress and well being among New Zealand principals (Hogden & Wylie, 2005). The report stated that 40% of participants described their stress levels as high or extremely high. The report identified and discussed barriers that could be hindering a principal from becoming the pedagogical leader that Robinson (2007) contends is critical for improving student achievement. Most participants thought they spent more time managing rather than leading. Dealing with the MOE initiatives and completing paperwork to meet deadlines for other reports were considered to be significant stressors because they took principals away from focusing on teaching and learning (Hogden & Wylie, 2005).

The tensions of workload and perspective

The principal's ability to lead significant educational change can also be influenced by the workload and perspective of teachers. How teachers view the importance and

relevance of any educational reform that the principal is seeking to lead is crucial to the success of that reform. Seeking to apply a distributive leadership framework may lead to the reform being perceived more positively by teachers because it promotes conditions that are more participative in planning and implementing (Spillane, 2006). Hargreaves and Fink (2006) also endorse distributive leadership and further argue that leading in a distributive manner is a moral responsibility of school leaders and they warn of the folly of leaders embarking on significant reform without seeking to gain teacher support through a distributive leadership framework.

Adopting a distributive leadership perspective will perhaps enable the principal and staff to view leadership more at the ground level where Spillane (2006) contends that the “interactions of leaders, followers, and their situations” (p. 26) enable effective leadership practices to be constructed. Spillane (2006) is a strong proponent of effective principal leadership practice being informed by a distributive framework, however, he strongly argues that this is not a one size fits all type of model but that is adaptive and able to be fitted to the specific leadership context. Spillane’s (2006) leader plus aspect reveals that it is the reciprocal interdependency of people’s interactions and not solely the actions and expertise of heroic principals that leadership practices are constructed. Spillane challenges school leaders to look beyond formal responsibility and functions that are delegated to specific individuals but points out that leadership practices exist in the intersection of leaders, followers and their situations. Different school members Spillane (2006) argues emerge and take on leadership functions as dictated by the situation or their own interests and areas of expertise.

A 2005 report on the workload of secondary teachers identified factors that school leadership need to consider in leading significant education change (Invargson, Kleinhenz, Beavis, Barwick, Carth, & Beavis, 2005). The report highlighted the theme that middle managers and especially HODs were facing increased workload pressures. Their responsibility in curriculum and assessment were key factors in their workload pressures. The report identified that the lack of time to complete required tasks was the main cause of the challenges that they were encountering. The report

identified that reducing workload and stress could be best achieved by increasing the number of teachers and also the amount of time for teachers to plan for effective teaching.

In seeking to lift overall school data capacity it is important that school leadership frames this in the wider context of teachers' professional lives. As the Invarson et al., (2005) report indicates secondary school teachers are facing increased workloads and like principals are dealing with the tensions that can be caused by the number of reforms that they may be required to simultaneously deal with.

Data and effective pedagogy

The New Zealand MOE has identified the important role that data could play in effective teaching and learning. The inclusion of the teaching as inquiry model in the effective pedagogy section in the Revised New Zealand Curriculum (MOE, 2007) is an indicator of this. The teaching as inquiry approach that the document advances draws heavily upon principles of DDDM. Greater teacher reflective practice including decision making that is informed by data to improve student learning relative to student teacher classroom interactions is a key premise of a teaching as inquiry pedagogical approach (MOE, 2007).

In the curriculum document the centrality of data is illustrated through the three inquiry foci: the focusing inquiry, the teaching inquiry, and the learning inquiry. The teaching inquiry is underpinned by a strong evidence base that advocates teachers drawing upon relevant research in conjunction with their own practice and the practice of their colleagues to plan teaching and learning actions that best accomplish the outcomes that were identified in the focussing inquiry. The learning inquiry requires teachers to effectively use relevant assessment data to determine the success of their teaching actions and also to guide future teaching and learning. Data collected from teaching and learning in action commonly referred to as formative assessment data, and data collected from teaching and learning after action commonly referred to as summative data both have a key role in the process of the

learning inquiry. The following diagram illustrates the cyclical process that the teaching as inquiry model promotes and it accentuates the pivotal role of data to inform learning and teaching.

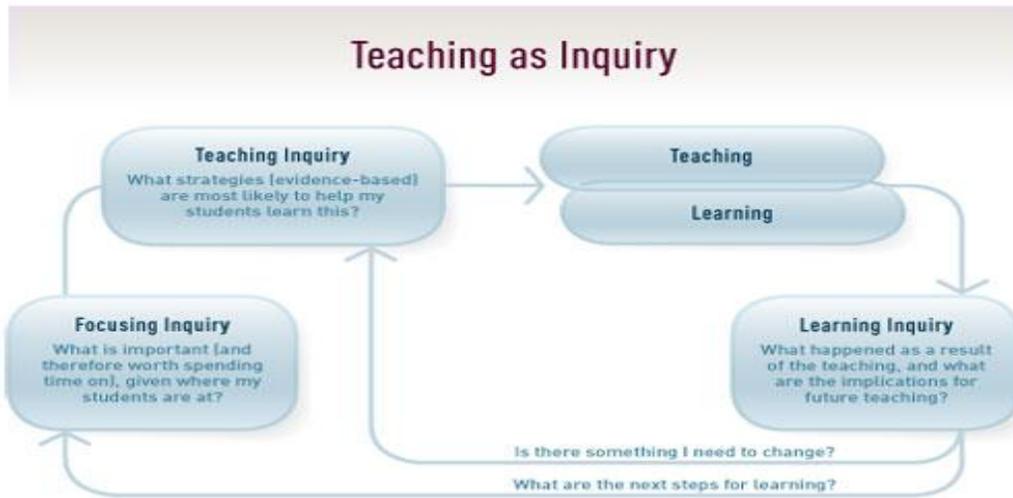


Figure 2.1 (The New Zealand Curriculum, Ministry of Education, 2008, p. 35)

DDDM and effective assessment

Effective teacher assessment is central to effective teaching and learning. It is a fundamental component of the teaching as inquiry model. The ERO (2007) argue that unless teachers are knowledgeable about their students' achievements and interest they will be unable to create teaching conditions to maximise student learning. The essence of effective assessment is to improve standards and not simply just to measure them. This was strongly emphasised by Timperley (2008):

Teachers need sophisticated assessment skills if they are to identify (i) what their students know and can do in relation to valued outcomes and (ii) what further learning they themselves need if they are to assist the learning of their students. Assessment of this kind cannot take place outside of the teaching-learning process- it is integral to it. Teachers, therefore, need a variety of ways of assessing their students' progress, ways that include, but go beyond standardised testing. (p.11)

To go beyond standardised testing is a main challenge for secondary school assessment practices (ERO, 2007). Critics of aspects of the educational surge in data that has occurred over the last decade are particularly guarded about what they view as the possible dark side of DDDM; a side that exclusively equates the development of the key competencies that the 21st century increasingly demands to the grades of the standardised test. Hargreaves and Shirley (2009) are particularly watchful of this dark side and now promote the fourth way which is informed by data but not zealously driven by it. In the fourth way data is no longer the master and a successful assault has been carried out “on the excesses of tested standardisation that deny diversity and destroy creativity” (Hargreaves & Shirley, 2009, p.109).

Depending mainly on summative data to inform instruction can be of limited value because it only records current student achievement, whereas formative assessment is used during instruction to identify specific student misunderstandings, provide feed forward advice to assist students’ correct errors, and also to inform instruction in ways that more fully engage students in the learning process (ERO, 2007).

In New Zealand Secondary Schools this is demonstrated by the strong focus on the data that is generated from the National Certificate of Education (NCEA). The NCEA is the senior secondary school credit based qualification which was implemented in 2002. Comparative school league tables can place pressure on principals to focus on this quantitative data and largely ignore any qualitative data (ERO, 2007).

Effecting school DDDM change

A key challenge for both principals and teachers is the leading or participation in a school learning environment that embraces the development of school data literacy competencies inherent within a teaching as inquiry pedagogical approach. Reeves (2008) lists four guidelines to assist Principals and other school leaders gain a greater understanding of how DDDM can impact positively upon their leadership practices. The first is to develop a culture whereby the school has committed to data analysis as a continuous process rather than a singular event. Reeves makes reference to a

2005 study by Oberman and Symonds that revealed that schools who reviewed data several times each month, rather than several times a year, demonstrated an increased capacity to narrow the achievement gaps between students. Starting with clearly focussed questions is the second tip that Reeves identifies. Having clearly focussed questions can evade the wearisome and often misdirected task of scanning through various assessment recording sheets without specific direction. The third guideline that Reeves suggest is for schools to promote a school wide practice of hypothesis testing, in which teachers consider their assumptions as the initial steps of their data analysis. As an example a common hypothesis is the belief that if students do not achieve in a certain mathematics standard, than the student will need to be drilled harder so that they are able to learn the required knowledge that will enable them to achieve the standard when offered a further opportunity for assessment. However, it may be that the student difficulty lies in a completely different area such as their inability to comprehend the language of the problem, or their inability in the case of many open ended questions to express their response in a written form. The fourth guideline Reeves suggests is for educators to go further than the actual numbers and to consider other causes of student success or failure. Increasing student diversity within classrooms has placed more responsibility on school leadership to clarify the why behind data and the need for educators to sharpen their focus on that which they have the most power to directly influence which is their own pedagogical practice.

When the only data available are student demographic characteristics, then it is easy to assume that the causes of high or low achievement are related to family income, ethnicity, gender, and primary language. Such an analysis avoids a consideration of the powerful influences of teaching practices, curriculum, and feedback, just to name a few variables that you won't find in a data warehouse. It's easy to create PowerPoint slides and wall charts showing data. It's more challenging – but more important- to have discussions about how the classroom experience of students differ. (Reeves, 2008, p.90)

DDDM and the Revised New Zealand Curriculum

The Revised New Zealand Curriculum was launched in November 2007 and the date of implementation for each school has been set 2010 (MOE, 2007) Through the

principal and staff each Board of Trustees is required to develop and implement a school curriculum that is underpinned and consistent with the principles of the Revised New Zealand Curriculum. The school curriculum is also expected to provide learning experiences for students that enable them to develop an appreciation and understanding of its values and to develop their key competency capacities.

The five key competencies of the Revised New Zealand Curriculum are featured to become significant levers in shaping learning of the 21st century. These key competencies are: managing self, relating to others, participating and contributing, thinking, and using language, symbols, and text. Hipkins (2007) differentiates key competencies by their universal application rather than competencies which have a more specific application. She defines the key competencies as the things “that all people need to know and be able to do in order to live meaningfully in, and contribute to, a well functioning society (p.4).

Gilbert and Bolstad (2008) seek to position the Revised New Zealand Curriculum in a 21st century environment by also arguing that the role of learning has changed significantly from the industrial assembly line model that shaped the traditional senior secondary school curriculum. This view of senior secondary education as having a different purpose- and therefore a different kind of curriculum – is as we think, part of the Industrial Age thinking and no longer appropriate in the 21st century (p.96). The emphasis on key competencies in particular is significant in that it represents a move away from the old focus of knowledge based credentials to the development of competencies that are an assemblage of knowledge, skills, abilities, dispositions, and orientations that are developed over a period of time (Gilbert & Bolstad ,2008).

It is envisaged by the MOE that as students move through the school system the learning experiences that they encounter will scaffold the development of these competencies so that students are able to apply them in a wide range of innovative and diverse contexts. The competency based model of the Revised New Zealand Curriculum not only requires educators to teach specific subject skills and knowledge but also to plan their teaching so that it develops student ability to apply the key

competencies. What was traditionally left in the background of curriculum learning and perhaps as an afterthought once the subject factual knowledge and skills had been acquired is now very much in the foreground of curriculum learning.

Instead of, as in the past, focussing on filling up young people with bits of knowledge they might need in the world beyond school, and hoping that some of the thinking that produced that knowledge rubs off on them along the way, the new approach explicitly aims to develop those thinking skills, and the ability to use them in different contexts. (Bolstad & Gilbert, 2008, p.100)

In reference to DDDM and the direction of learning promoted by the Revised New Zealand Curriculum it is critical that school leaders consider the implications of the key competencies and the changes in learning and teaching that is advocated. Claxton (2006) writes:

Doing well at school does not make you a better thinker. Not necessarily, and not usually. You can get good results in the arcane world of 'educational standards', and still lack resilience, resourcefulness, and the ability to organise your own learning. If we are serious about making education in to an effective preparation for complex living, there are still fudges and fond hopes that we have to face up to. (p.4)

Principals not only face the challenge of leading learning in preparation for the Revised New Zealand Curriculum but they also face the challenge of how to integrate principles of DDDM in a way that enhances the quality of learning and teaching. How is student development in the key competencies assessed? What type of data is going to be produced? How is this data going to be interpreted and processed into school improvement actions?

Hipkins (2007) contends that the inclusion of key competencies in the heart of the curriculum has resulted in a rethink in the methods of assessment that educators have traditionally used. Meta level knowing, fostering a disposition to learn, empowering students to become experts on how they learn, and learning that occurs in authentic contexts are four areas that she identifies as critical to school curriculum development and increasingly necessary to assist students to navigate the challenges of their lives now and in the future. The assessment practices that are implemented Hipkins (2007) argues need to be adaptive in nature to enable clear

learning goals for key competencies to coexist with the more traditional learning goals such as literacy and numeracy development. The use of learning logs, portfolios, rich tasks, and developing learning stories are four possible assessment practices that Hipkins suggests that school inquire after in order to reframe their assessment strategies and data collecting to more effectively meet the new learning demands of the Revised New Zealand Curriculum.

With the emphasis towards summative assessment data for New Zealand secondary schools these tensions are elevated for the secondary school principal. DDDM offers secondary school principals a school improvement pathway that needs to be strategically planned, resourced, and over time embedded in to the culture of the school. The key competencies of the Revised New Zealand Curriculum add an interesting dimension to this pathway, a dimension that in likelihood could emerge in time to be a significant character in the planning and actions of not only the educational policy makers but also the educational policy practitioners.

Conclusion

This chapter has provided a comprehensive review of the literature pertaining to DDDM and the New Zealand secondary school principal. The chapter has contrasted the New Zealand educational DDDM experience with the American DDDM educational experience and also linked the growth of educational DDDM as an expected educational leadership practice to both economic and political factors. These factors combined have elevated DDDM as an expected educational leadership principal practice in most developed countries.

Linking the growth of DDDM as an expected leadership practice in New Zealand secondary schools to the New Zealand school governance political reform of the 1990s has been an important focus of this chapter. This provides a context of understanding for the increased acceptance of DDDM as an expected educational leadership tool in New Zealand.

The chapter has also provided a literature background to each of the research aims that were examined in this dissertation. It has shown that educational researchers have generally portrayed DDDM as an essential leadership tool that principals need to apply in their decision making processes. The possible darker side of DDDM with a total focus on standardised testing has also been discussed. However, like most tools the potential to do good or bad is often determined by the hand of the craftsman that controls it. DDDM appears to be similar except in this dissertation the craftsman is the New Zealand secondary school principal.

The barriers that New Zealand secondary school principals may face in their attempts to lift school data capacity have also been discussed. They are similar to their American counterparts; however, they must be set in a wider context of other reforms and competing tensions that they often have to simultaneously manage. The challenges of applying DDDM practices to improve student learning and lift achievement has also been discussed relative to the Revised New Zealand School Curriculum. Literature suggests that there will be significant challenges in shaping DDDM as a tool to provide actionable data for school leadership to improve student outcomes. This challenge however is linked mainly to the shift in the direction of learning that the curriculum promotes rather the leadership practices that DDDM advocates.

The literature also suggest that DDDM as a tool for New Zealand secondary school principals' to improve student outcomes cannot be viewed in a separate and isolated fashion. Arguably its potential to improve student outcomes is best understood and applied when it is framed collectively in the perspective that acknowledges the other leadership reforms and challenges that New Zealand secondary school principals are currently facing.

Chapter Three – Methodology

Introduction

It has become generally accepted in the world of research that no particular research methodology is believed to be universally superior. Instead, the application of a research methodology to a research topic is best determined by the maxim of being fit for purpose (Cohen, Manion, & Morrison, 2007). Davidson and Tolich (2003) have expressed the view that each challenge that research seeks to enquire after requires distinct solutions. The research challenge requires a custom designed approach aligned to its research purpose. They further argue that research methods are best determined by the theory involved, the question being asked, the people they are being asked of, and the reality principle which is determined by the amount of time and money that is available to complete the research.

The focus of this chapter is to discuss the methodology of this research. I will first explain, and justify the selection of a qualitative approach through an interpretive paradigm as the methodological approach of choice. The interpretive paradigm has been posited in a practitioner research framework. The chapter also provides justification for the semi structured interviews as the method of data collection and also the data analysis methods that were used in this research. The chapter concludes by discussing issues of reliability and validity as well as the key ethical issues that were considered.

Why an interpretive qualitative methodology?

Picciano (2006) contends that because of the quantitative nature of the actual practice of DDDM that relevant studies tend to be slanted towards a normative positivist approach. He qualifies this by stating that it is a misconception to assume

that DDDM depends exclusively on quantitative approaches explaining that some of the most significant decisions that school leaders make are based on qualitative methods of research such as observations, interviews, or visits to other sites.

The actual practice of DDDM as Picciano contends does indeed have a very strong disposition towards the number crunching of the traditional positivist researcher, but as discussed earlier; this study is more about the decision making behind the numbers, rather than the numbers themselves.

An interpretive qualitative paradigm best fits a study that seeks to examine how secondary school principals view the role of DDDM in their decision making practices, because their views, and also the differences of their views, are difficult to quantify as a positivist research methodological approach demands. Moreover, attempts to generalise in terms of a linear cause and effect model could curtail the richness of any data that emerges and limit the richness of the experiences that the data seeks to illuminate. An interpretive qualitative research approach instead seeks to examine issues more holistically where parts are viewed as interrelated and because of the variable meaning that people bring to their experiences data cannot be separated in to different parts (Davidson & Tolich, 2003).

The fundamental undertaking of the interpretive paradigm is to acknowledge and give meaning to the subjective world of human experience. Retention of the integrity of the phenomena being studied is strengthened by this methodology which aims to get inside the thoughts and behaviours of the participants, and view the problem from the inside out, rather than from the preferred detached external outside in position that is generally favoured by the positivist research paradigm (Cohen et al., 2007).

The descriptive detail of the interview data viewed through a qualitative interpretive lens strengthens the contextual understanding of the social behaviours, values, principles, and viewpoints which influence principal decision making and are generally best emphasised and understood in the relative context that they are located (Hoy & Miskel, 2005). Principal leadership practices in regard to DDDM are arguably best able to be examined, analysed, understood and viewed through taking

cognisance of their environment and what may be viewed as odd or irrational is best clarified when interpreted relative to their particular environments.

Practitioner Research

Over the last decade the theme of educational research impacting on educational practice to improve educational outcomes has received significant coverage. Robinson and Lai (2006) have carried out significant work in this area. They promote the idea of educators also becoming researchers as a means of narrowing the gap between educational research and the practitioners of educational research.

Practitioner research ideas have significantly informed the interpretive qualitative paradigm that underpins this research. Recognising, acknowledging, and giving the participants a voice in the research has the potential to reduce the gap that often disconnects the research from those whom it is mainly designed to enlighten: the practitioners. Robinson and Lai (2006) write:

Teachers usually treat research as something that is done by outsiders who come into their workplace with an idea of what to study and then collect data, analyze it, and write a report. The school then decides whether or not to use the research. In this traditional model, those, who produce research and those who use the research are two different groups of people, doing very different jobs. If you think about researchers and practitioners as different groups, you reinforce the idea that teachers react to the research of others rather than generate themselves. If you think about “researcher” and “practitioner” as different roles, however, then you see how these roles overlap, and how teachers can be both. (p.4)

The fact that I am a secondary school Principal, a practitioner, further impacts on the selection of an interpretive qualitative paradigm to underpin this methodology. As Wellington (2000) advocates the role of the researcher is a key instrument in the research itself. The researcher in education, similarly to the researcher in other disciplines, affects the researched, and therefore the research itself. Wellington (2000) writes about the important role of both being reflective and also reflexive when undertaking research. Reflecting on the bias that is part of all research to varying degrees is the focus of reflexivity which is defined as the “explicit recognition of the

fact that the social, researcher, and the research act itself, are part and parcel of the social world under investigation” (Hammersley & Atkinson, 1983, cited in Wellington, 2000, p. 42).

A main purpose of this research is to positively contribute to school improvement. A school improvement focus rather than a school effectiveness focus is mainly concerned with processes rather than outcomes and therefore favours a qualitative research approach. A qualitative interpretive research paradigm posited in a practitioner framework provides a greater likelihood for the researcher to collect, interpret, analyse, and present data that more authentically represents the stories and experiences of the researched. It can also be argued that it is through the experiences of the researched as interpreted by the researcher that the possibility of research effectively bridging the gap that often separates theory from practitioner practice could more likely occur (Robinson & Lai, 2006).

Research Methods

The use of semi structured interviews is the primary data collecting method of this research. The use of the interview is one of the most widely used methods of data collection in educational research and the prevalence of its use often creates challenges regarding the quality of the interview, and also the resulting analysis of data. However, an interview that is conducted with concern and proficiency offers an incomparable source of rich research data (Anderson & Arsenault, 1998).

The interview is an appropriate research method for this study because of the detail of the information required and also the issues being studied are advanced by further development or explanation (Hinds, 2000). The interpretive qualitative paradigm which underpins this research is generally more conducive to a semi structured interview format than a structured interview format because it provides greater flexibility for the researcher to explore themes as, and if they emerge in the interview.

A structured interview is useful when there are a lot of questions that are usually neither debatable nor specialist bound. Anderson and Arsenault (1998) refer to these

types of interviews as normative. They contend that this type of interview is used when the researcher is intent on finding the views of a lot of people on fairly straight forward issues.

Anderson and Arsenault (1998) refer to a semi structured interview as a key informant interview and differentiate between the two types of interviews by not only the detail of the questions, but also the knowledge of the people that are interviewed. They write:

The researcher is not interested in statistical analysis of a large number of responses, but wants to probe the views of a small number of elite individuals. A key informant interview is one directed at a respondent who has a particular knowledge about the subject being discussed. (p 191)

The research participants

I conducted semi structured interviews with five practising secondary school principals. These five principals were invited to participate in this research from a population group of eight practising secondary school Principals. This group, which I am also a member of, regularly meets as a professional learning group to discuss pertinent educational leadership issues. The professional learning group is located in the Central North Island region of New Zealand.

The interview

Each of the participants were interviewed for approximately 45 minutes. All of the interviews were conducted in the offices of the participants. Copies of the interview questions were sent to the participants to consider at least seven days prior to the actual interview. The interview settings were created to minimise the disruption to the participant and encourage them to openly express their views of the questions that were asked.

The semi structured interview format that was applied provided a flexible enough framework that enabled the participants to define their own experiences relative to DDDM and their leadership practices. This approach, in my view, expanded

participant opportunity to more genuinely reveal their perspectives of how DDDM impacts on their leadership experiences. The qualitative research interview guide was structured in a manner that guarded against delimiting enquiry by asking fairly general questions (Bryman 2004; Davidson and Tolich, 2003).

The semi-structured interview protocol used was informed by the work of Creswell (2009). The protocol included a relevant ice breaker question that was followed by 4 - 5 questions based around a qualitative research plan and concluded with a question or statement that provided further possible scopes of inquiry. Linked to these questions were probes designed to ask the participants to explain their ideas in greater detail or to elaborate further on particular issues. The interview questions can be viewed in Appendix A.

Personalising an inductive data analysis approach for this research

Cohen et al, (2007) define the role and function of qualitative data analysis as the “organising, accounting for and explaining the data; in short, making sense of data in terms of participants’ definitions of the situation, noting patterns, themes, categories and regularities” (p. 461). They also state that there is no single correct way of analysing and presenting qualitative data and that the maxim fitness for purpose referred to earlier in this study in regard to research methodology equally applies to data analysis.

To apply this fitness for purpose maxim to data analysis it is important that the researcher be clear in their understanding of what they want the data to do. This decision of purpose has a direct influence on the kind of analysis that is undertaken and also the way that the analysis is written up. Moreover, qualitative data analysis is inevitably interpretive and this magnifies the extent of reflexivity in the lens of the researcher and significantly impacts on the reliability and validity constraints of research as the researcher seeks to interpret sense and meaning of the raw interview data (Cohen et al., 2007).

Thomas (2003) promotes the view that an inductive approach to qualitative data analysis is an efficient method to search out and interpret the meaning behind the rich data that most qualitative studies generate as it enables raw data which is often varied and extensive to be condensed into a briefer summary form without sacrificing the need to establish obvious connections between the research objectives and the summary findings that are drawn from the raw data. Thomas (2006) further states that developing a model of theory pertaining to the underlying structure of experiences or processes derived from the raw data is also a major reason that researchers choose to apply a general inductive approach to the data analysis of the raw data that is often generated in a qualitative study.

The coding process of this research was designed to capture the key aspects of the themes in the raw data. The coding was used to help link the data from the five participants to a particular research question. This provided a platform to draw the relevant data from the transcripts to explore themes relevant to the research questions and to a large extent preserve the coherence of the data (Cohen et al., 2007).

The table on page 38 illustrates the colour system that was used to code the text data to the relevant research question. The second column links the interview questions to the relevant research question. Text that was deemed irrelevant was blacked out of the transcripts and designated colours were merged to display overlapping text.

Table 3.1. Data coding system that was used in research

Research question	Interview Question	Colour Code
Why is DDDM important for improving learning and raising achievement in secondary schools?	1 – 3	
What barriers and opportunities do Principals of secondary schools currently face to improve learning and raise achievement?	4-5	
In relation to the New Zealand Curriculum that is currently being implemented what are the implications for secondary school Principals in applying principles of DDDM to improve student learning and raise achievement?	6	

Reliability and Validity

A review of literature about how interviews are applied to educational research suggests that there is no single definition of what exactly constitutes an interview (Powney & Watts, 1987). As referred to earlier in this chapter the wide use of interviews by educational researchers can often raise quality issues. Reliability and validity are areas that researchers in particular need to consider because they prescribe research accuracy and credibility.

Mohammadi (2008) describes reliability and validity as that which requires researchers to consider whether they are actually studying what they think they are studying, and also whether research measures are being consistently applied. He writes that “validity is the generalisability of research findings, or the sense of unbiasedness whereas reliability is the sense of unity” (p.2).

Cohen et al (2007) state that that within research the most practical way of achieving validity is to as much as possible, minimise the amount of bias. Interviewer characteristics, participant characteristics, and question content are the key bias research features that Cohen et al have identified (2007). It is imperative that researchers display a cogent understanding of these issues and include strategies to deal with the research validity issues in the planning and design of their research project. To address these issues of reliability and validity this research presented a possible representation rather than a definitive representation of social reality and respondent validation exercise were a feature of the qualitative methodology that underpinned this study (Bryman, 2004).

Research Ethics

Issues of ethics are a key component of all forms of research. The safety of participants is the key driver of ethical research standards and informed consent is the most fundamental principle of ethical acceptability. Fully informing participants of the nature and purpose of the research, its risks and benefits, and also absence of coercion are the primary principles of informed consent (Anderson & Arsenault, 1998).

The consent form and the letter of invitation to participate in this research assured both participant and school anonymity (see appendices). All participants were offered a right of withdrawal from the project for up to fourteen days after he or she had validated the interview transcript which also included the right to edit or delete contents of the interview that the participant believes were unintentionally divulged. The interest in educational leadership principles amongst the participants establishes a point of commonality that to a large extent limits the possibility for deception to occur.

The project protocol allowed participants to withdraw from the project as discussed in the respect for rights and confidentiality and preservation of anonymity that has been previously mentioned. Privacy was safeguarded by ensuring that research data was stored in a secure place and that access to the data was limited to the researcher.

Conclusion

This chapter has introduced the methodology of this research as a small scale interpretive qualitative study that is informed by ideas linked to practitioner research. The semi structured interview as the principal data collection tool has also been discussed in combination with a general inductive approach to data analysis as promoted by Thomas (2003). The chapter concluded by discussing issues of reliability and validity in the sense of establishing and maintaining research credibility, and also considered the research ethics that were pertinent to this study

Chapter Four – Data Analysis

Introduction

In this chapter I discuss the analysis of the research data generated from the semi structured interviews. The chapter commences by the classification of the participants that enabled an organised system of reference in the data analysis. The classification included reference to three key characteristics of the secondary schools that the participants lead as principals. This is presented as a context for the participants and the data they generate to assist the reader in their interpretation of the data analysis of this chapter.

The data analysis of this chapter follows the premise of the inductive coding process that was applied to this research. The primary aim of the coding process was to establish a base to inform the data analysis by capturing the key aspects of the themes that have emerged. The coding process of this study has categorised the data in to six related DDDM educational themes (themes a–f) around the three questions of this study: Why is DDDM important for improving learning and raising achievement in secondary schools? What barriers and opportunities do Principals of secondary schools currently face in applying principles of DDDM to improve learning and raise achievement? In relation to the New Zealand Curriculum what are the implications for secondary school principals in applying principles of DDDM to improve learning and raise achievement?

Establishing a research participant context

The information in table 4.1 lists three key characteristics of the secondary schools that the participants lead as principals. The three data classifications of the table are: school decile bands, student roll bands, and the gender of the student body. These classifications were used because they present established New Zealand educational

reference points that are often used to inform thinking in areas such as educational policy, educational funding, and educational research.

The classifications also offer a possible context to position the viewpoints of the participants in regard to the themes that have emerged from the data, and may help clarify some of the thinking that is referred to throughout this chapter.

Table 4.1: A school context for participants

	School Decile	School Roll (July 1, 2009)	Student Gender
Principal A	5	501-675	Coeducational
Principal B	6	851-1025	Coeducational
Principal C	5	301-500	Coeducational
Principal D	6	1601-1800	Single Sex Boys
Principal E	5	1026 -1200	Coeducational

Improving learning and raising achievement

Theme A: DDDM is a valued tool to improve learning and raise achievement

The interview questions were designed to generate data that could be used to form a type of lens to view how secondary school principals possibly viewed the importance of DDDM to improve student learning and raise achievement. The interview data showed that each of the principals shared a common understanding about the purported value that DDDM offered to improve student outcomes. They all viewed DDDM as an important tool to guide their decision making.

Within this shared understanding there also existed a shared acknowledgement that certain tensions often hindered the rate of progress that their particular school was making from their present DDDM practices location to a future location whereby DDDM practices were to become an embedded feature of their school culture. There was a resounding acknowledgement by the participants of the potential value that

DDDM offered to improve student learning and raise student achievement. There was also a broad range of application of the practices of DDDM referred to by the research participants.

The first comment, made by Principal D, is widely representative of how the group viewed the potential of DDDM to impact upon teaching and learning:

Data will give pretty clear evidence around performance, and it is about raising expectations of that performance based on the data, so I think data is very valuable, it is a sound measurement of improvement around reflection.

The same principal explained how their particular school was attempting to implement changes to accentuate the value of DDDM to their faculty leaders and teachers:

There are some quite specific goals, decrease the numbers of Not Achieved, increase the numbers of students passing Achieved with Merit and Excellence. We now need to have the conversation around where are we at, what are we expecting for 2010, and are we on track to achieve these. The setting of goals has happened, but the conversation around that hasn't happened, which I think lowers the value of that document. There needs to be an opportunity for an HOD to have the conversation and reflect on it.

Principal C saw that data offered benefits to those students who were achieving, but even greater benefits to those students who were not achieving:

So basically by looking at the data we are able to see the students who are not achieving and this guides us to address the problems with their non-achievement. That is why data is so important because it not only identifies those students that are achieving but more importantly it identifies those students who are not achieving and we have an ethical responsibility to respond to the data by critically reflecting on the messages that the data tells us.

Principal E discussed the importance of qualitative data informing decision making by referring to a student attitude survey that they were in the process of designing:

It is important that I model data informed decision making as Principal. There are different types of data that need to be considered and you do need to talk about qualitative data. I would like to gather data about student attitudes and behaviours towards learning and have gone ahead and designed a questionnaire which is in draft form. It is too long at the moment, but I will get it narrowed down and it will provide us good quality data. Ideally I am looking for, what are different year levels saying, what are different ethnic groups saying, what are the gender differences to what they are saying.

A thought expressed by principal A illustrated that principal thinking in regard to DDDM is not limited solely to quantified measures that are linked to student academic achievement. Principal A expressed the view that allocating resources is also a significant area that should be informed by data:

I believe that the possibilities for DDDM to impact on our leadership decision making are huge. It even impacts on how we allocate our resources. Our Board is paying for five extra teachers and also a good half dozen management units from our Operational Grant. That is a hell of a lot of money and we are somewhat tracked into it. But if you were using data effectively you could find ways to allocate resources based on need. I think that this is perhaps a bit of a dream.

The last sentence of the comment above hints at some of the tensions that principals face in their endeavours to move DDDM in to the foreground of teacher leadership practices. I explore this particular theme further in the chapter.

The main point to emerge from the analysis around Theme A is that the participants generally shared a common view of the value that DDDM offers to educational leaders. The examples referred to illustrate the diversity of application and are connected by a shared belief that DDDM offered significant benefits to improve student learning and raise student achievement.

Theme B: Summative data dominates the secondary school educational landscape

Overall the types of data that the participants require to be collected, analysed, and applied with the specific intention of informing and improving teaching and learning are fairly consistent. Progressive achievement tests (PAT), Supplementary tests of reading and achievement (STAR) and Assessment tools for teaching and learning (asTTle) are the main assessment tools that all five schools use to generate student data at the junior year 9 and year 10 levels.

The interview data suggests that the main purpose of the data collection and subsequent data analysis at the year 9 level is to inform class placement. All five schools use student achievement data provided by contributing schools and also data generated by school start of the year assessments. The schools vary in their data collecting strategies and also the types of data that is collected. All five schools follow

a form of streaming at the junior level and the principals advocate this as an effective use of student data because it positioned the student in a more supportive learning environment whereby teaching and learning activities are pitched at the academic levels of students in a particular class.

The interview data suggests that data collected in secondary schools is mainly summative in nature to determine class placement and that the formative nature of assessment in most cases appears to be a less important consideration. The significance and importance of summative data was alluded to by principal B:

Our Year 8 students are assessed in November by their Primary schools, and then we test them again in week 1 to determine class placements. We do not rely solely on information provided by primary schools and we primarily use STAR data to stream students.

The importance of initial testing to inform student placement was a view shared by the five participants. Principal B also spoke about the assessment of students who were selected by data to be part of their literacy programmes.

We have a special literacy class where we monitor their reading levels throughout the year. A student gets tested at the beginning of the year and they get tested at the end of the year. Results in this class are very positive because they consistently show improvement for most students.

The summative nature of the beginning and the end of the year assessments illustrate a regular pattern of the types of data collected by all five secondary schools. The summative nature of assessment at the year 9 level to stream students was also referred to by principal C:

We depend upon STAR, PAT, and ASTTLE and it is very important for us because we are able to put students in classes according to their abilities. We assess at the beginning of the year and at the end of the year to see if students have made any progress.

All five participants expressed the view that NCEA data is the main source of student achievement data that is used at Year 11, Year 12, and Year 13. NCEA data similarly to entry data positions students in particular subjects, or streams of subjects.

Participants expected curriculum leaders and teachers to analyse their NCEA data and adapt their programmes to address any issues that their analysis revealed.

The interview data related to NCEA suggested that similarly to the Year 9 and Year 10, data collected at the NCEA level is largely summative in nature and that the formative nature of assessment in most cases appears to be a less important consideration. Principal A referred to this when comparing the challenges of gathering meaningful student achievement data at the junior level compared to gathering meaningful data at the senior level:

At the junior level we use AsTTLe at the beginning of the year and again at the end of the year. At the senior level we have the NCEA data and this makes it so easy compared to the junior level. A challenge that we face is the data is not on the NZQA site early enough and this makes it more difficult to inform your planning for the present year on last year's NCEA results.

Principal D also made reference to the significance of NCEA data to inform teaching programmes:

The departments are going to be giving annual reports and they are going to be looking at giving individual breakdowns within each curriculum area. I think it is very important that there is a focus on that. Each department is doing a pretty comprehensive sort on analysis and then give some indication why that situation has occurred.

An issue that arises from the analysis of theme B is the possible preponderance of summative achievement data within secondary schools. The data indicates that despite the significant learning opportunities that formative assessment offers most participants were somewhat silent about how they were using formative student achievement data to inform their decision making. This gives rise to a further tension in that perhaps DDDM at the secondary school level is driven by the external pressures of NCEA and it is this type of data that principals can most readily put their hands on to inform their decision making. A thought expressed by Principal E summarises the tensions of trying to fit largely summative data into a formative type of format:

Within the classroom, teachers are expected to gather data as they are going through their teaching learning programmes, and ideally use the data to analyse where they are going in terms of learning. That probably has not been done as well as it should be and this is where we want to be heading. It is done definitely at the senior level because we have introduced analysis sheets to each department to use. It is really about collecting the data around unit and achievement standards, but it is more importantly about analysing that data and then the best step next is to actually evaluate what that means in terms of teaching and learning programmes. So they have to go through like a three step process. The actual collecting and analysis isn't actually the important part, it is actually what are you going to do with it.

Theme C: The issue of theory to practice

The interview data suggests that data collected in secondary schools for the intention of improving learning and raising achievement is well intended but is generally struggling to cross the void that can separate educational theory from practitioner practice. This was mainly evident through participant views of the variable levels of application of DDDM practices by other educational leaders in the organisation.

This was illustrated in an experience that Principal A had with a heads of department (HODs) regarding applying DDDM practices:

Last year when I first arrived I naively thought that all HODs would submit their analysis to me. I only received three. This year I have been stricter with it and have made it compulsory. I received two thirds of the data analysis from departments. I attended an HOD meeting and basically said to those HODs that had not submitted their data analysis that they had until Monday to submit them. If I did not get it in I would issue them with a written warning that would go on their file. I had to go a bit negative to get complete compliance, but I got 100%, and I think I got through to people that it was a reasonable request..

All five participants saw the value of DDDM to inform teaching and learning but each had challenges to varying levels about persuading other educational leaders within the organisation to exercise the type of thinking, develop the required skills, and make the necessary effort to implement DDDM practices. Principal C elaborated on an experience regarding the reluctance of an HOD to personalise learning informed by literacy data:

The other day at a HOD meeting a concern was raised that they did not know the ability of a certain child and that because of this they could not engage the

student in learning and that the student came to class did nothing and sat around wasting time. My Assistant Principal, who looks after the data, suggested that the teacher should go on KAMAR and look up the relevant stanine in mathematics and english for this particular student. Some teachers are reluctant to use the data that is provided centrally for them. If they can't understand stuff, they can't do anything, because the comprehension is important, so there is no point in teachers using some language which the student cannot understand. Obviously they lose interest and won't do anything.

The reluctance of some teacher leaders as illustrated by the examples referred to regarding implementing school DDDM practices identifies the existence of competing tensions that participants are wrestling with in their quest to give DDDM a higher profile in the schools that they lead. The theme of theory to practice also provides a background to introduce Theme D and E which focus on the opportunities and barriers that DDDM offers to secondary school principals to inform their decision making in regard to improving student learning and raising student achievement.

Enhancing opportunities and reducing barriers to apply principles of DDDM

Theme D: Distributing DDM professional leadership

As referred to earlier all five participants viewed student data as a significant and indispensable source of information, and DDDM as an important tool that should inform not only principal leadership decision making, but all decision making throughout the school.

Three of the five participants revealed that they had set specific professional and appraisal goals to improve their individual capacity to lead change within the school that was more informed by data. They spoke of the need to be able to establish clear links between their decision making and student data. They saw themselves as leading learning in this area and saw a pressing need to communicate clear expectations to HODs and teachers, that similarly, they also were expected to develop their capacity to use student data to inform their decision making. They also identified that the effectiveness and sustainability of the DDDM change that they were seeking to bring about in thinking and in application was to a large extent dependent on expanding DDDM vision and DDDM leadership amongst their HODs.

This was clearly evident in a thought expressed by Principal E regarding the direction of professional learning and the need to distribute DDDM leadership at all levels in the school:

What we have done is tried to influence the teachers and the departments to do that part. Because if we come up with a figure as a school it means nothing, whereas if I come up with something as a teacher or we come up with something as a Department, and say our kids in Maths Level 1, say it is 65% or 95% or whatever it is, and we know our kids coming in, as we have a picture of their capabilities are as well and where they are going to achieve, we are better off setting our own targets. So that is something I am really keen to do, so this planning and recording thing we have got going in the school, each of the DP's set their own targets and they report on their progress towards those targets, and I do the same and in fact that flows back right through the school now.

Principal B also recognised the importance of distributing school leadership in the area of DDDM. The acceptance of DDDM as a valued tool by curriculum leaders and teachers expressed through their application of its practices to inform teaching and learning was viewed as critical by Principal B who had set this as an individual appraisal goal with the intention of expanding this across the school:

Raising the profile of DDDM in the school is one of my appraisal goals. Currently I go through all the staff appraisal goals, and they are still not putting a lot of inquiry around the practice of data. I am trying to encourage HODs and staff to take risks. If they get it wrong, that's fine, but they need to examine the data to see where it went wrong, why it went wrong, and what they could do to shape their practice next year.

The encouraging of taking a risk through inquiry is something that Principal B spoke very strongly about. It could be argued that Principal B believed that the costs associated with perceived pedagogical risks are outweighed by the benefits that both the teacher and the student will gain through the teacher practising an inquiry teaching approach informed by data.

The theme of distributing leadership across the school in regard to DDDM to improve student outcomes was also highlighted by Principal C. It was important according to Principal C, for teachers to become critical interrogators of data. It was the expectation of Principal C that HODs would lead their departments in analysing data

to inform their curriculum planning and their pedagogical practice to improve student outcomes:

Teachers have been provided with five years of data to look in to. What we expect from the HOD is to work with the department members to identify trends from the data. We expect the HOD to lead departmental discussion reflecting on the programmes from a data perspective. What does this student find difficult?, Why is this difficult? They then need to design something exclusively for that student, or a small group.

Theme E: DDDM and the tensions of workload and perspective

Interview data uncovered that coexisting with the theme of distributing school DDDM leadership to develop a more data informed school environment was the theme of workload and perspective. The data suggested that acceptance and implementation of DDDM practices to the scope that the participants envisioned was to varying extents impeded by how school HODs and teachers relative to their perceived workload viewed the DDDM requirements that participants sought to establish. It appeared that the view that the participants shared in regard to DDDM practices was generally struggling to gain traction with how the school HODs viewed the importance of DDDM practices.

It could be also argued that the data indicated that it was probable that the participant perspective of DDDM and the urgency they felt about demonstrating more organisational acumen in regard to student achievement data could have been influenced by what they perceived the ERO were looking for as evidence of good educational practice. The competing tensions were evident in how some of the participants referred to the ERO in some of their responses despite the fact that no explicit question was asked of them to link DDDM with ERO expectation. Yet the data clearly indicated that each one of the participants showed an awareness of this expectation. This was demonstrated by Principal A in acknowledging the tensions of an impending ERO visit and the expectation that the ERO would be looking for evidence of DDDM being a feature of school decision making:

Yes developing my own capacity to use data is my own personal target this year. To be honest this is partly because I know we have got ERO coming. Every other

school that has had them this year has told me that ERO is looking at self audit processes in terms of informing your planning. So what I am working on at the moment is with individual HODs and teachers in charge of subjects to come up with a process where they are not just looking at the NCEA results, looking at the Asttle, but actually then reflecting professionally and writing down what that means for planning this year's work

Data provided by Principal E demonstrated how perspective possibly influenced by ERO expectations could play a role in the design and implementation of strategy to expand effective DDDM practices across the school:

The objectives that we have set, and I set the objectives, make no bones about that, and they have come out of ERO Reports from the past, but also things we have worked out during the year, so an example of that is, prior to ERO coming in this year, we had identified two things that we wanted improvement in. One of them was to use data at our Junior Level in a more effective manner. So when ERO were here they said the same thing, and I said we have already identified that, you are not telling us anything new.

It could also be argued that this expectation and the tension that the participants face as secondary school principals to be the pedagogical leader in a way that improves student learning and raises their achievement within a maze of other expected duties such as managing complex human relationships and administering significant government financial resources in a 21st century environment. The following is the continuation of Principal E's above comment as it gives insight in to the possible pressures that Principals face in dealing with competing tensions. Principal E refers to the tensions of responding to the recommendations that have been made by the ERO following a school review:

It is interesting, there is sort of a lag between what they think should be put into place, and the strategies or tools or professional learning or the development, or whatever needs to happen. It is just left up to the individual school and that is a downfall of the self managing school model, is that we are all re-inventing the wheel all around the place and that is not efficient in that sense. You come up with some wonderful innovative things, but why are we all doing it individually. Why is it then up to us to actually go and find out what needs to happen? There should be a more co-ordinated approach I think, especially with first time principals.

This tension is further acknowledged by Principal A who wondered how realistic it is to expect them to be leaders of learning:

As new principals I think we are getting a lot more pressure to become leaders of learning, rather than directors of the school, chief executives. I think the move is already out there, and I sometimes wonder if it is totally fair, because we are still asked to be property managers, we are still asked to write a budget and balance it, we are still dealing with personnel issues totally and at the same time they are still saying to get all that in there.

It could be that the frontline location of the participants in regard to external auditing carried out by the ERO has spawned a DDDM perception that has become dislocated from the actual activators of Principal DDDM vision, namely the HODs. The HOD perception of DDDM despite well placed intentions may not ring with the same urgency because of workload and perspective. Perhaps they see the call for greater data awareness to be just another thing that they need to do in a growing list of other things? A consideration of the tensions of workload and perspective in regard to planning and implementation may offer secondary school principals a clearer pathway to follow in their efforts to embed DDDM practices as a stronger feature in the culture of the schools that they lead.

The implications of applying principles of DDDM and the Revised New Zealand Curriculum

Theme F: The uncertainty of DDDM and the Revised New Zealand Curriculum

Interview data suggested that although participants were aware of the possible implications of adapting learning to fit the Revised New Zealand Curriculum that their general focus of DDDM possibilities could be best described as cursory. Participant response to this particular question had the widest level of variance of all the questions that were asked and all but one of the participants needed to be prompted to generate focussed discussion in this area.

This possibly indicates a level of uncertainty of the participants and the schools that they lead in reference to not only their implementation of the Revised New Zealand curriculum but also how principles of DDDM can be applied to the vision, values, principles, and key competencies of the New Zealand Curriculum. In reference to

DDDM, it was the uncertainty of data around the key competencies that was the main theme to emerge. Principal A explained that the key competencies of the Revised New Zealand Curriculum presented a challenge for educational leaders in regard to their actual assessment:

The key competencies are important in regards to data. We are going to have to show some sort of data. But the challenge is how are we going to assess them. How do we then collect that data and say 70% of our kids can self manage?

This was repeated by Principal C who shared a similar view of uncertainty in regard to data and the key competencies:

We wanted to include the key competencies as part of the reporting in term 4 but decided not to proceed because parents are still unsure about what the key competencies are and how they should be reported.

The theme of the uncertainty of data and the key competencies was also expressed by Principal B:

One of our school wide goals is the implementation of thinking skills across the curriculum, and I guess that is something that we can be looking at to collect data on.

From 2010 all mainstream schools are expected to have implemented the Revised New Zealand Curriculum. In regard to DDDM and the opportunity to improve learning and raise achievement the thinking of the participants does appear to be somewhat muted. A comment expressed by Principal A, clearly identified the tensions that educators leaders may face in trying to make sense of the data around the key competencies of the Revised New Zealand Curriculum:

In regard to managing self I often think of an irate dean who brings me a student who has been consistently late to school. In listening to what they have done before they come to school, and every day when they get home from school, and most of the weekend, the competency of managing self is put into context with this particular student. For them to actually get to school considering all of the things that they have to do is amazing.

Summary

The data analysis of the semi structured interviews of the five participants raise some significant issues regarding how DDDM is viewed and applied in their particular educational settings. The six themes that are identified offer a degree of lucidity around not only the opportunities that DDDM practices offer to improve student outcomes but also the tensions that are evident in their efforts to convert DDDM from educational theory to practitioner practice. The opportunities of DDDM according to the participants to improve learning and raise achievement are significant but there are also barriers that need to be traversed. The next chapter will aim to provide greater perspective around the themes that have emerged by discussing them in greater detail.

Chapter Five – Discussion

Introduction

This chapter is structured around a model of compare and contrast. Each of the themes that emerged during the data analysis of this study are compared and contrasted with the main DDDM themes that were highlighted in the literature review of this study. The discussion of this chapter also lays the groundwork to develop the conclusions and recommendations that will be the main focus of the final chapter of this study.

Improving learning and raising achievement

DDDM is a valued tool to improve learning and raise achievement.

Effective DDDM practices at all school levels were something that the participants were attempting to promote and develop as an expected and ubiquitous feature of school decision making processes. The DDDM leadership experiences reflected in the data showed that the participants were seeking to establish and develop a more data informed landscape. They demonstrated a practical application of the theoretical definition of DDDM that literature advances in that they appeared to be purposefully attempting to select, gather, and analyse data to identify various school issues, inform possible responses to these issues, and select the preferred response to address the issue that the data raised (Muo & Childress, 2009).

The participants were aware of the DDDM leadership expectations that were placed on them to work collaboratively with Boards of Trustees to develop and implement strategy to meet the planning and reporting requirements that were established by the 2001 Educational Standards Act. In regard to DDDM participant experiences it appeared that the planning and reporting legislative requirements of the Act were having positive downstream effects on their capacity to lead, develop, and give

support in an educational environment that seemed to be more informed and willing to apply DDDM practices to inform their decision making.

Viewed collectively the improvement of leadership data capacity was evidenced most in the type of thinking that they demonstrated. Their thinking indicated that they viewed school data capacity as a strategic process rather than a single event. This is consistent with the DDDM contention of Streifer (2004):

Data-driven decision making is not a panacea or a crystal ball – it will not yield immediate and conclusive answers to tough questions. The best it will probably do is guide your thinking, identify promising actions from a host of potential options, and help you set your compass heading toward the promising intervention. (p. 26)

Viewed from an individual perspective, however, the participants clearly were positioned at different points in their efforts to translate DDDM theory in to school planning actions. The variance of the DDDM participant experiences referred to in chapter four are indicative of this. The variation of response and also the difference of participant positioning in leading the type of DDDM organisational change that they were endeavouring to bring about is supported by literature. The 2007 ERO report referred to in chapter two: *The Collection and Use of Assessment Information in Schools* makes indirect reference to this in their conclusion that of the 314 schools that they evaluated just over half (52 percent) were considered to be effectively gathering and analysing student achievement data to inform and improve learning and achievement. Of the 61 secondary schools that were included in this report, 36 percent were considered to have developed and implemented an effective school wide approach of assessment that provided actionable data to inform further learning. The disparity of this type of data suggests that the variation of DDDM participant experiences is not a surprising feature of this study, and moreover it could be argued that considering the complexity of schools the observed variation of DDDM participant experiences was perhaps an expected feature.

Although the literature theme of leaders struggling to bring about sustainable DDDM school change was evident in the leadership accounts of the participants, it appeared

that overall participant attitudes to DDDM practices were more optimistic. This is contrasted with the studies referred to in chapter two by Popham (2008) and Reeves (2008) whereby principal participation in DDDM practices generally appeared to be less than optimistic and seemed to border on heightened states of frustration. This however, may be due to the American based researchers dominating current DDDM literature and it may not be entirely transferrable to the New Zealand context because of the stricter audit sanctions that were linked to the 2002 NCLB legislation compared to the legislation of the 2001 Education Standards Act.

Summative data still dominates the secondary school educational landscape

Black and William's 1988 seminal article 'Inside the Black Box' redirected teacher focus on the power of formative assessment to improve student learning and achievement. The theme of effective assessment, of which formative assessment is a key component, has been further developed by Clarke (2005). She contends that educators should be more concerned with developing a school culture that aims to reduce the thinking that significant student achievement is measured solely by a single grade. The ipsative nature of formative assessment can promote student efficacy and seeks to engender learner direction and confidence rather than the more traditional classroom comparison effect which can often contribute to students becoming discouraged and ultimately disengaged with learning (Clarke, 2005).

Teacher student day to day interactions are powerful levers to inform future learning and are key elements of effective assessment (ERO, 2007). Often however, this type of formative data is relegated to the too hard basket and educators can be prone to put their data eggs into the one basket of summative assessment (Clarke, 2005). This data is usually measured by one off unit tests, and in the New Zealand secondary school situation NCEA credits. NCEA data is useful in that it can contribute to informing teacher, department, and school planning for the following year. From an individual learner perspective, however, it is unable to provide the actionable data that the learner of the current year requires. A challenge for school leadership is to ensure that teachers are supported to implement assessment practices of a formative

nature which are more focussed on assessment for learning. This was highlighted in the 2007 ERO of the assessment practices of schools:

In other cases, teachers gathered little assessment information until the end of a unit of work. Although they were then able to summarise how well students had achieved, there was limited evidence that teachers had adapted their teaching style or content during the teaching in response to their students' abilities. (p.26)

The DDDM perspectives and experiences of the participants clearly identified with school leadership and teacher struggles to diversify assessment practices to include formative assessment. All five participants were confident in their DDDM processes at the NCEA level but there was a certain amount of indifference at the Year 9 and Year 10 level. This pattern is also supported by literature; generally New Zealand secondary schools struggle to provide comprehensive assessment information at the year 9 and also the year 10 level (ERO, 2007).

The ready availability of this type of data in combination with both principal and teacher workload can possibly explain why the majority of the participants seem to be satisfied to lead their schools down the quantitative data pathway. Of the five participants, only one was investing significant time in developing a tool to gather data that was of a qualitative disposition. This could also possibly be represented by the possession of the requisite knowledge, skill, and experience relative to DDDM of this participant as opposed to the other four participants.

The issue of theory to practice

Literature about effectively translating educational theory in to educational practice is generally cautionary in nature. Fullan (2001) equates the type of change required to translate theory in to practice as being significant because it impacts on the three parts of the multi-dimensional lens through which he views the process of effective educational change. He argues that for significant educational change to occur teachers will be required to change their pedagogy, change their teaching resources, and change their beliefs about teaching and learning. Profound educational change

will require a majority of teachers to alter how they think, what they believe, and to a large extent how they see their world of effective teaching.

The frustrations that participants expressed about the barriers of translating DDDM theory into DDDM action can be linked to the multi-dimensional lens of change that Fullan (2001) promotes. To implement effective DDDM practices it is necessary that teachers are prepared to respond to the messages that data advocates. This will inevitably require them to consider the three prongs that Fullan (2001) identifies as pillars of significant educational change: their pedagogy, their teaching resources, and their beliefs. Data coaching of teachers by specialists clearly indicates that presenting teachers with data does not generally transform their thinking about how the data can be used to facilitate instructional improvement. To achieve this teachers' need to be supported by way of specific data coaching that enables them to engage in a type of problem solving and root analysis of progress that assists them to erect bridges between data and instructional decision making (Bernhardt, 2004; Buhle & Camille, 2008; Glickman, 2002).

Investment through effective and sustained professional learning is an issue that must be considered by school leadership teams as they seek to develop school data capacity. Providing teachers with screeds of data and asking them to carry out an analysis to evaluate levels of student achievement and also to inform future planning will more than likely fail to materialise if it is not supported by a school wide professional learning plan to achieve this. Du Four (2005) emphasises the importance of this:

For teachers to participate in such a powerful process, the school must ensure that everyone belongs to a team that focuses on student learning. Each team must have time to meet during the workday and throughout the school year. Teams must focus their efforts on crucial questions related to learning and generate products that reflect that focus, such as lists of essential outcomes, different kinds of assessment, analyses of student achievement, and strategies for improving results. Teams must develop norms or protocols to clarify expectations regarding roles, responsibilities, and relationships among team members. (p.10)

Issues of both principal and teacher workload could also contribute to the challenges that educational leaders encounter in their efforts to translate educational theory in to educational practice. In the life a secondary school teacher and especially an HOD workload is a significant issue (Invargson et al., 2005). A perceived lack of teacher application of a particular theory or educational initiative may be attributable to misaligned priorities. Simply put, in the context of increasing workloads, what the principal may think is a priority may not feature as to what an HOD or a teacher may consider to be a priority. I would be hesitant to conclude that a lack of teacher application of principal direction can be interpreted as the absence of support for that direction. It may in fact be that the main activators of principal direction, namely HODs, are slow to act because they are still dealing with the previous demands that were placed on them and have not yet had the time to look at the current demands.

Enhancing opportunities and reducing barriers to apply principles of DDDM

Distributing DDM professional leadership

The challenge of developing a more data informed school environment cannot be dealt with in an isolated manner. Each of the themes that have evolved from this research possesses a high degree of synergy. To create a situation where educational theory is effectively translated into practice there are several factors that must be considered. Two such factors are the need to effectively distribute leadership and also the need to acknowledge the existence of tensions that may arise out of workload and perspective.

The concept of distributed leadership, which has been previously discussed, is crucial if governance policy administered through management procedure is to effectively break through the veneer that often separates both of these from practitioner practice. The experiences of the participants in seeking to expand the effective use of DDDM suggest that applying a more distributive leadership framework would yield greater DDDM benefits. Spillane's (2006) Leader Plus focus is particularly relevant to this situation because it reaches beyond the principal and seeks to acknowledge and empower other designated leaders in the school. It is through the authentically

motivated actions of these other leaders, including teachers, that school reform aims and objectives are best likely to be achieved and sustainably managed (Harris & Spillane, 2008).

Hargreaves and Fink's (2006) analogy of sustainable organisational improvement being similar to that of sustainable bodily health improvement or of sustainable protected eco-system improvement also has significant relevance to the experiences of the participants in their efforts to raise the profile of DDDM in school leadership decision making. They argue that sustainable improvement does not happen "through singular strategies, emphasising only one crop or health solution. Rather, it is the interaction of these elements in complex and holistic systems that move organisations and environments forward" (p. 181).

Viewed from this perspective, advocating for a form of distributed leadership in school reform projects such as increasing school data capacity possesses greater potential to impact upon teacher practice because not only are available skills and knowledge more effectively directed but there also exists the possibility for greater alignment between external agencies, school leadership, and most importantly the teacher. In an era of cascading educational reform this greater alignment may simply be a product of teachers feeling that they are in control where inquiry is being done by them and not what typically happens where inquiry is done to them (Robinson & Lai, 2006).

DDDM and the tensions of workload and perspective

Intertwined with the theme of distributive leadership is the theme of workload and perspective which can often escalate tension and stall organisational progress to achieve a specific end. Both of these themes are directly influenced by the workload pressures of both principals and teachers. The pressures that principals face in being a leader of learning amidst other administrative demands can influence their perspective of educational reform (Hogden & Wylie, 2005). Likewise, the increasing demands and pressure on HODs and teachers can influence their perspective of how

they view educational reform (Bennett et al, 2007; Invargson et al, 2005). A challenge for school leadership is to develop and support an environment that is able to navigate between these two dominant educational perspectives so that the students who represent another dominant perspective are indeed the primary beneficiaries.

Alton Lee (2003) identified quality teaching as the key influence to achieve high quality outcomes for diverse students. Reducing the variance of quality teaching within the school is a significant challenge for school leadership. Professional learning to improve teacher capacity is viewed as an important driver of effective school reform to improve student outcomes (Timperley, 2010).

The important role of the principal in professional learning that was discussed in the literature review of this research has a high bearing on the theme of workload and perspective and how it impacted on the efforts of the participants to expand DDDM school practices. It is the principal that often sets the tone for organisational professional learning and establishes the necessary conditions for in depth extended engagement to occur. I would concur with Timperley (2008), and similarly argue that such a state is fundamental to facilitating significant educational change. Despite this, in relation to DDDM the focus and sustainability of school reform is often handicapped by either under investment in school professional learning at the commencement or perceived wind shifts during the reform course that all too often moves the leadership and school focus to the next initiative (Fullan, 2001; Hargreaves & Shirley, 2009; Timperley, 2010).

The external accountability demands that are placed on the participants ERO visits with the ever present tension of providing school pedagogical leadership more than likely had a strong influence on how they viewed the power and importance of DDDM. Each of the participants recognised the central role that effective DDDM school practices could play in improving student outcomes yet it appeared that they were unable to invest the school professional learning time required for this to be sustainably achieved. Perhaps from an HOD and teacher perspective DDDM

requests are viewed as important, but amidst an array of other things that they are required to do, they consider that there are other things that are just more important (Bennett et al, 2007; Invargson et al, 2005).

The implications of applying principles of DDDM and the Revised New Zealand Curriculum

What was visibly evident was that the focus of the participants was somewhat limited in regard to DDDM and the Revised New Zealand Curriculum. Data suggested that although there was a strong focus on creating school conditions to facilitate the effective implementation and ongoing development of the Revised New Zealand Curriculum, that DDDM itself, was not a prominent feature. The challenge of assessing key competencies and values did not generally feature in their thinking.

Recent literature suggests that readers should not be surprised by this finding; schools are all located at different places as they seek to amalgamate the Revised New Zealand Curriculum in to their local school curriculum (Cowie & Hipkins, 2009). Perhaps this rather scant focus by the participants is also an expression of workload and perspective and in particular the pressures that principals face in satisfying the competing tensions that they often encounter (Hogden & Wylie, 2005). DDDM was viewed by all participants from mainly a summative outlook with NCEA being the key focus. This was possibly perceived as their most pressing DDDM requirement and one which may have demanded their main focus. I would suggest that their limited attention to DDDM and the Revised New Zealand Curriculum is more a reflection of immediate priority within the realities of their position as a principal of a New Zealand secondary school rather than an indicator of their DDDM interest, or lack of interest.

Conclusion

The discussion of the data analysis of this research paints a clear picture of how the participants viewed DDDM practices. They viewed them mainly in a positive light and subscribed to the dominant DDDM literature view that these practices are an essential step of effective planning and decision making at all school levels (Kowalski

et al., 2008; Luo & Childress, 2009;Picianno, 2006; Popham, 2008; Reeves, 2008; Streifer, 2004).

Positioned within this belief was the recognition of competing tensions or barriers that had a limiting effect on their efforts to translate DDDM theory in to practitioner practice. These barriers are also consistent with DDDM literature and the challenges that leaders face in developing greater school data capacity (Kowalski et al., 2008; Luo & Childress, 2009; Picianno, 2006; Popham, 2008; Reeves, 2008; Streifer, 2004). The data analysis identified that the challenges of raising school data capacity should not be viewed in isolation or as a separate entity. The themes generated from the data displayed a high degree of connectedness that must be acknowledged and reflected in leadership strategy to effectively respond to significant school reform.

Chapter Six – Conclusion and Recommendations

Introduction

The translation of DDDM theory into practitioner practice appeared to be something that the participants sought to accomplish. Each participant displayed an awareness of this and was attempting to lift school capacity to use data to improve learning and teaching.

The participants acknowledged that school planning informed by DDDM practices was a mandated expectation of the 2001 Education Standards Act. They also acknowledged that there was a high probability that the ERO would include some type of evaluation of school DDDM practices as part of their next ERO report. The participants were also aware of their gate keeping role in regard to school reform initiatives and the pressures to respond to MOE initiatives and ERO evaluations. Embedded within these expectations also existed a pedagogical belief that enhancing school data capacity was worth pursuing because it offered significant teaching and learning benefits.

This research set out to contribute to the knowledge base of how a sample of New Zealand secondary school principals was choosing to apply practices of DDDM to improve student outcomes. An important part of this research examined and discussed the barriers that may have been hindering the attempts of the participants to enhance school data capacity. In the final chapter of this study I attempt to fashion a researched response to these issues. I commence this chapter by linking the synthesis of the data themes and literature that occurred in chapter five with each relevant research objective. To provide a clearer context for the reader I then discuss some of the limitations of this research and will also present and discuss key recommendations that may assist secondary school principals in their attempts to

improve school data capacity with the specific intent of improving learning and raising achievement.

Improving learning and raising achievement

The synthesis of the themes that evolved from the data and literature portray a very clear image of the valuable contribution that DDDM could make to improve student outcomes. DDDM can provide a framework that enables educational leaders to collaboratively work with teachers to purposefully drill down beyond the numbers and discover the root causes of student performance issues and to remedy them in an ongoing, accountable fashion. DDDM advocates evidence based inquiry that seeks to inform and clarify direction rather than define or dictate direction. Finding the balance of the extent to which data informs decision making is a key task of school leadership (Kowalski et al., 2008; Picianno, 2006; Streifer, 2004).

Effective educational DDDM practices, similar to other educational issues, are complex. The literature review and data analysis of this research suggests that lifting school data capacity cannot be viewed as a separate reform that is disconnected from other school issues and learning. Timperley (2008) argued that educational leaders must be selective in the areas of school reform and ensure that organisational learning is theoretically coherent with other new learning in the school.

This research sought to illustrate this by establishing that DDDM to improve instruction is to a large extent driven by effective school assessment practices. DDDM is similar to a computer in that it can only respond to the inputted data. If the data is faulty then conclusions based on this data will more than likely also be faulty (Kowalski et al., 2008). Therefore, the need to provide professional learning with a specific focus on assessment that informs instruction is an important consideration for secondary school leaders. This is an area that Du Four (2004) identifies as critical component of the use of data to inform instruction:

When teacher teams develop common formative assessments throughout the school year, each teacher can identify how his or her students performed on each skill compared with other students. Individual teachers can call on their team

colleagues to help them reflect on areas of concern. Each teacher has access to the ideas, materials, strategies, and talents of the entire team. (p.10)

Linked to the DDDM concept is the formation of collaborative teacher teams to analyse student achievement data and develop data responsive strategies. Distributing leadership is a vehicle that both research participant experience and literature have identified as a possible key driver of sustainable educational reform.

Schools that are seeking to enhance DDDM capacity are encouraged to locate this in a greater framework of building a school culture of inquiry, energised by distributing leadership. Rather than relying on a few data specialists, schools are encouraged to involve all staff in data analysis to figure out the implications for improving instruction. This could be facilitated by appointing a data specialist team to coach and mentor teachers with the strategic intention of over time raising the data capacity of the entire staff (Boudette, 2005).

Opportunities and barriers

DDDM could provide significant opportunities for principals and teachers to develop evidence based practices to improve learning and raise achievement. The literature review of this research identified the high profile that DDDM currently holds with some educational leaders in general and the findings from the five participants reiterated this. However Hargreaves (2009) and Hess (2008) have been critical of the DDDM approach that focuses on narrow high stakes assessment summative type data as the sole indicator of student learning and achievement. Once again the interdependent nature related to complex educational issues was evidenced through certain barriers seemed to germinate from other barriers. Perhaps the overarching barrier that prevents not only DDDM but other school reform agendas from gaining a foothold in schools is that of workload and perspective.

I acknowledge that this is a rather simple approach, but it is also a realist approach. The barriers that were discussed in the literature review section of this research were present in the conversations of the participants in some form but they seemed to be linked to the more pervasive issues of workload and perspective.

It could be argued that distributed leadership notwithstanding its theoretical leadership strengths to sustainably bring about organisational change has also become an economic reality. Schools exist in a climate of rising accountability and financial downsizing. A stark alternative that schools may face is to either distribute leadership or face senior leadership burn out (Youngs, 2009).

Similarly educational reforms such as enhancing school data capacity need to be positioned in a type of framework that acknowledges the impact of these tensions in effecting the change that reform is seeking to bring about. Principal A's thought of whether it is fair to expect principals to be leaders of learning as well as all the other expectations that are placed on them reflect the possible tensions of workload and perspective. In regard to educational reform and perspective many HODs face similar frustrations and because of demanding workloads are often left to make choices of where their loyalties lay; are they with the principal and the senior leadership team, or are they with the team of teachers that they have the responsibility of leading (Bennett et al., 2007).

In considering workload and perspective the powerful effect size that Robinson et al., (2009) have attributed to principals promoting and participating in teacher learning and development accentuates further the dilemma of school reform being effectively led and sustainably managed.

Establishing a more data informed school pathway posited in an overall school culture of inquiry could offer significant school benefits. To achieve this however there are considerable barriers that need to be overcome before secondary high school students in general are in a position to experience these benefits.

I would argue that the most significant barriers are not unique to DDDM. They are in fact symptoms of a greater educational reform malaise, often caused by what at times appears to be an avalanche of disjointed, sporadic, fragmented, and superficially expedient school reform projects that require principal action (Fullan, 2001). The responding to such reforms if not strategically aligned to other learning in the school can unintentionally divide focus and distract effort. Timperley (2008) describes the

relevance of workload and perspective and how it could also relate to principal reform efforts:

Leaders need to recognise that bringing about substantive change is a complex business and reduce competing demands accordingly. It is particularly important to ensure that other innovations taking place in the school are theoretically coherent with the new learning. When this is the case, theoretical understandings are deepened, not compromised. One of the greatest threats to comprehensive school reform is the introduction of competing reforms that lead to fragmentation of effort. (p.18)

DDDM and the Revised New Zealand Curriculum

Participant application of DDDM practices in preparation for the Revised New Zealand Curriculum was generally a future consideration. From a DDDM perspective the main focus of the participants seemed to be on responding appropriately to their present data. It would be interesting to ask a similar question to the participants in another three years once they have had time to fully implement the Revised New Zealand Curriculum. Perhaps given this time their responses may be more informed of how they were using a DDDM approach to meet the direction of learning that the Revised New Zealand Curriculum promotes. Their brevity of response to this particular question is in itself a rich source of data. It suggests that the realities of their principal role in dealing with competing tensions may have resulted in DDDM and the Revised New Zealand Curriculum being placed strategically in a basket to be dealt with in the future due to the lack of linkage between DDDM, formative assessment and the inquiry based model that underpins the Revised New Zealand Curriculum.

Limitations of this research

The limitations of this research are based around three main themes: the paucity of literature about how New Zealand secondary school principals are using DDDM to improve student outcomes, the qualitative methodological approach through an interpretive paradigm, and the small size of the sample group.

The paucity of literature available that focussed specifically on how New Zealand Secondary School principals were applying DDDM to improve student outcomes could be regarded as a limitation. Much of the specific DDDM data that the participants provided had to be compared and contrasted with DDDM literature that was mainly situated in an American educational policy context. As established earlier this was mainly a result of the NCLB legislation which instilled a greater call for educational accountability. The scarcity of relevant DDDM literature was emphasised by Luo and Childress (2009) who expressed the view that although DDDM in education has expanded, it is still very limited in relation to a secondary high school principal perspective. From a New Zealand perspective, however, most of the DDDM literature is sourced from the MOE or the ERO. This provides further possible limitations because of the potential political interests that may be represented in the available literature.

The challenges of being able to generalise knowledge from one situation to another is an issue that is prevalent in a qualitative methodological research approach (Bryman, 2004). This challenge was discussed in chapter three; however, it is appropriate to acknowledge that this may have a limiting effect on how a reader may interpret the findings that this research attempts to highlight in relation to how New Zealand secondary schools principals are using DDDM to improve student outcomes.

In reference to the size of the sample and the validity of being able to generalise knowledge from one population to another, I stress that the intent of this qualitative study is to add to existing theory not to create a situation where findings could be uplifted and uncritically applied to another population (Bryman, 2004). The data and research findings that are generated from this research are relevant solely to the participants. I leave it as a responsibility of the reader to clarify and give contextual meaning to what they read, and also how they interpret what they read (Wellington, 2000).

Recommendations

The following recommendations are based on the key findings of this research and deal specifically with implications of practice. They are specific to the participants. They may however, provide valuable ideas for other New Zealand secondary school principals to consider as they seek to improve overall school DDDM capacity

1. Improving DDDM capacity should be clearly linked with school focus and direction. It should be strategically planned and charter driven. A long term commitment should be made at the outset and visible links with indicators of progress should be included in the charter. This needs to be clearly communicated with, and to staff. With an abundance of reforms in New Zealand secondary schools it is important that DDDM is viewed as part of the overall school direction and not as a separate add on to satisfy external requirements.
2. Sufficient professional learning must be provided if the tensions of workload and perspective are going to be overcome.
3. Distribute school leadership by creating a school data specialist team. The specific foci of the team are to work with staff to: clarify why, and what data needs to be collected, how this data is to be collected, and how this data will be analysed to inform and improve instruction. Central to this is the mentoring and coaching of teachers to participate in all aspects of the data trail. If this is to have the desired effect members of the data team must be given sufficient time for them to act in this capacity. Simply adding this on to their already overcrowded schedules will more than likely result in the desired end not being achieved.

4. Access appropriate external expertise to assist in data team and staff professional learning. It is important, however, that ownership and responsibility of the reform stays with the school and within distributed school leadership structures.

5. Include a strong cycle of professional learning with principals and prospective principals about how DDDM can be used to inform instruction. In New Zealand's secondary principal leadership system this could be catered for as a component of the beginning principals' course or included in the conferences of regional or national principal organisations.

Conclusion

The capacity of DDDM to impact on New Zealand secondary school principal practice and also the practice of the teachers that they are required to lead is delicately poised. Since 2001 there has been legislation that clearly sets out school DDDM expectations in New Zealand. Despite this, and nearly a decade later the secondary school principals that I interviewed are still experiencing significant challenges in creating an improved school data capacity pathway that involves HODS and classroom teachers.

The success of mandating significant education change through compliance has a chequered and somewhat forlorn track record (Senge, 2001). The challenge for DDDM is similar to almost any other educational reform that is seeking to gain greater traction in practitioner practice. Robinson et al., (2009) have identified that the most significant difference that principals can make to improve student learning and achievement is to promote and participate in teacher learning and development. Timperley (2008) has also identified the conditions that enable effective professional learning that will make the greatest difference to student outcomes. Yet within these dimensions the competing tension of workload and perspective and the need for principals to respond to external educational reform agendas can result in schools

pursuing disconnected organisational learning that more often dissipates and is overtaken by the next school reform project (Fullan, 2001; Hargreaves, 2009; Timperley 2008).

To prevent DDDM in secondary schools from being another overtaken reform it is crucial that it is located within a greater school focus that embraces inquiry. It needs to be amalgamated as a fundamental component of a school drive to create a culture of inquiry. Needless to say it must also be adequately resourced and strategically planned with a long term focus supported by short term indicators to chart progress. Located within such an environment DDDM may be able to cross the theoretical barrier and impact on teacher practice so that student learning and student achievement are the primary beneficiaries.

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Appendix A – Interview questions

Research question one: Why is DDDM important for improving learning and raising achievement in secondary schools?

1. From a secondary school principal perspective what forms of student data do you believe are critical to be collected for the purpose of improving learning and raising achievement?
2. Can you please take me through the process of how used student achievement data may have been used to inform the setting of the student improvement targets in the 2009 school charter?
3. How do you promote the use of data to improve learning and raise achievement at the school level, the department level, and also the classroom level?

What barriers and opportunities do Principals of secondary schools currently face in applying principles of DDDM to improve learning and raise achievement?

4. From your experience as a secondary school principal what do you see as the barriers that are preventing secondary school principals from using data to inform their decision making in reference to improving learning and raising achievement?
5. Once again from your perspective as a current secondary school principal what opportunities do you believe that data could offer you to improve your decision making in reference to improving learning and raising achievement?

In relation to the New Zealand Curriculum what are the implications for secondary school principals in applying principles of DDDM to improve learning and raise achievement?

6. In relation to the New Zealand Curriculum what are the implications for secondary principals in using data to improve learning and raise achievement?

Appendix B – Principal participant Information form

My name is Richard Crawford. I am currently enrolled in the *Master of Educational Leadership and Management* degree in the School of Education at Unitec New Zealand and seek your help in meeting the requirements of research for a Dissertation course which forms a substantial part of this degree.

The aim of my project is to add to the knowledge base of how secondary school principals are able to use the principles of Data Driven Decision Making (DDDM) to improve student outcomes. The central aim of this study is to gain an understanding of how a group of five secondary school principals within one professional learning cluster view the role of DDDM to improve learning and raise achievement. The views of these secondary school principals will be compared and contrasted with literature, and also the views of a representative from both the ERO and also the MOE.

I request your participation by being agreed to be interviewed in a semi structured interview situation for up to 45 minutes on the above topic. The interview will be recorded and you will be provided with an interview script for validation within 21 days of the interview taking place.

Neither you nor your organisation will be identified in the Dissertation. The results of the research activity will not be seen by any other person in your organisation without the prior agreement of everyone involved. You are free to ask me not to use any of the information you have given, and you can, if you wish, ask to see the Dissertation before it is submitted for examination. If after receiving the interview transcript you wish to withdraw from the project you will need advise the researcher within two weeks of posting the transcript.

I hope that you will agree to take part and that you will find your involvement interesting. If you have any queries about the research, you may contact my principal supervisor at Unitec New Zealand.

My supervisor is Howard Youngs, phone 815 4321 ext.8411 or email hyoungs@unitec.ac.nz

UREC REGISTRATION NUMBER: (insert number here) This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix C – Participant consent form



Data driven decision making and principal leadership

I have had the research project explained to me and I have read and understand the information sheet given to me.

I understand that I don't have to be part of this if I don't want to and I may withdraw at any time prior to the completion of the research project.

I understand that everything I say is confidential and none of the information I give will identify me and that the only persons who will know what I have said will be the researchers and their supervisor.

I understand that my discussion with the researcher will be taped and transcribed.

I understand that I can see the finished research document.

I have had time to consider everything and I give my consent to be a part of this project.

Participant Signature: *Date:*

Project Researcher: *Date:*

UREC REGISTRATION NUMBER: (insert number here)

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the

Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix D – Interview transcript validation form



Data driven decision making and principal leadership

I have viewed the transcript of the interview that was conducted on (Day) between myself and Richard Crawford. I can validate that the transcript is accurate and understand that I could also request a digital copy of the interview.

Participant Signature: *Date:*

UREC REGISTRATION NUMBER: (insert number here)

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix E – Principal participant invitation

Dear Principal Participant

My name is Richard Crawford and I am a member of the principal professional learning group facilitated by School Support Services out of the University of Waikato that you are also a member of. I am currently enrolled in the *Master of Educational Leadership and Management* degree in the School of Education at Unitec New Zealand and seek your help in meeting the requirements of research for a Dissertation course which forms a substantial part of this degree.

The 60 credit dissertation is titled: ***Data driven decision making and principal leadership.***

The aim of the research is to add to the knowledge base of how secondary school principals are able to use the principles of Data Driven Decision Making (DDDM) to improve student outcomes. I wish to interview five principals from our principal professional learning group on how DDDM impacts on their leadership practices and compare and contrast their views with literature, and also the views of a representative from the Ministry of Education and also a representative from the Educational Review Office. I believe that the research will be of value because it may contribute to demystifying the perceived complexities associated with the principles and practices of effective DDDM and provide a critical base to assist principals of secondary schools clarify their understanding of the role of DDDM in improving teaching, learning, and raising student achievement in the secondary schools that they lead.

The research questions which this study will address are:

1. Why is DDDM important for improving learning and raising achievement in secondary schools?
2. What barriers and opportunities do Principals of secondary schools currently face in applying principles of DDDM to improve learning and raise achievement?
3. In relation to the New Zealand Curriculum that is currently being implemented what are the implications for secondary school principals in applying principles of DDDM to improve learning and raise achievement

The study is supervised by Howard Youngs from UNITEC and he can be contacted for further clarification at 815 4321 ext.8411 or email hyoungs@unitec.ac.nz.

What would be involved for you if you agreed to take part?

You would need to?

- Be interviewed by myself for up to 45 minutes on how data driven decision making impacts on your principal leadership practices.
- The interview will consist of six questions that will be provided to you for consideration at least seven days prior to the interview.
- To validate the interview transcript that will be provided to you for consideration within 21 days of the interview occurring.

Neither you nor your organisation will be identified in the dissertation. The results of the research activity will not be seen by any other person in your organisation without the prior agreement of everyone involved. You are free to ask me not to use any of the information you have given, and you can, if you wish, ask to see the dissertation before it is submitted for examination.

If you are willing and able to participate could you read the attached information sheet and complete and return the attached consent form by fax (attention: Richard Crawford 078865217) by August 7. I will make contact with you by phone to answer any questions that you may have and to consult you over the next steps involved in your participation.

If you do not wish to participate, please do not respond and I will make no further contact with you about this matter. I can assure you that if you decide not to participate in this research, that this will have no effect on our professional relationship.

Thank you for giving this matter your consideration.

Kind regards

Richard Crawford

UREC REGISTRATION NUMBER: (insert number here)

This study has been approved by the UNITEC Research Ethics Committee from (date) to (date). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.