

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**ENHANCING STUDENT ACHIEVEMENT THROUGH
CURRICULUM INTEGRATION BASED ON NEW ZEALAND'S KEY
COMPETENCIES:**

A Descriptive Case Study

A thesis submitted in partial fulfilment of the requirements for the degree of Master of
Philosophy (Education) at Massey University, Palmerston North, New Zealand

ANA MATANGI-HULLS

November 2010

November 13, 2010

STATEMENT OF AUTHENTICITY

I certify that the thesis entitled Enhancing student achievement through curriculum integration based on New Zealand's key competencies: a descriptive case study and submitted as part of the degree of Master of Philosophy (Education) is the result of my own work, except where otherwise acknowledged, and that this research thesis (or any part of the same) has not been submitted for any other degree to any other university or institution.

Signed: _____

Date: _____

ABSTRACT

New Zealand schools are constantly searching for means for enhancing student achievement, maximising learning potential and utilising effective teacher pedagogy. Curriculum integration is widely supported as an effective pedagogical approach to curriculum design and has been identified within The New Zealand curriculum (Ministry of Education, 2007) as a method that would successfully aid in implementation of all aspects of the new curriculum, including the *Key Competencies*.

This research used a descriptive case study approach to attempt to enhance student achievement through the creation of a model of curriculum integration that was based on the Queensland *New Basics* model and yet unique to a New Zealand setting so that it developed the teaching and learning of the *Key Competencies*. Through the conducting of semi-structured interviews, extensive observations of students and teachers, and document analysis, there were five emergent themes identified. One of these themes effectively led to a working model of curriculum integration that enhanced student achievement and overall learning experiences. Central features of the model include the development of a personalised school curriculum: *Deeper Understandings* and learning dispositions, recognition and development of effective pedagogical tools and approaches, culminating rich assessments encompassing self, peer, formative and summative assessment; and greater student engagement, levels of higher order thinking and transferability of learning.

ACKNOWLEDGEMENTS

The research conducted in this study and the thesis itself, have only been possible with the extensive support and cooperation of many wonderful people.

My first acknowledgement must be to Dr Jenny Poskitt. Not only has she been my supervisor throughout this study, but she has been like a mentor to me since I began my teaching career, she has been very encouraging of my potential, planting the seed of Masters study in my mind and then aptly supporting me in determining and pursuing a course of research. Jenny's determination for me to succeed provided all the support I needed. I cannot thank her enough. Similarly, thanks must also go to Bill MacIntyre, my second supervisor who has always believed in me and provided thoughtful support and feedback.

I am also grateful to the principal, staff, students and board of *Te Tuara School*. I offer my sincere gratitude to the board of trustees who not only permitted, but supported me in carrying out this research. To the students, I am extremely grateful for they were wonderful in helping me with this study. To the teachers I also offer my thanks for their encouragement, their support and their generous giving of time – we couldn't have achieved so much without their commitment. Also, a special mention of thanks must be made to the principal, who was always ready to lend an ear, a hand or a "reality check", helping me to engage regularly in rigorous discussion over what we were doing and supporting me through time, leadership and professional development so that this study could be possible. A special mention must also be made to all those lead teachers, principals and facilitators involved in the *EHSAS Graduate Cluster*, including Hanan Harrison – a very knowledgeable and innovative professional.

Finally, to my husband, Corrin... where do I begin? Thank you for your love and patience – for doing the housework when I just needed to study; for braving the aisles of the supermarket alone when I couldn't get away; for cooking more than just spaghetti toasties and for, thankfully, loving your Xbox so much you often didn't notice how much time I wasn't spending with you while I was working on this.

TABLE OF CONTENTS

STATEMENT OF AUTHENTICITY	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF FIGURES AND TABLES	xiii
CHAPTER 1: INTRODUCTION	1
1. Background to the Study	1
2. The Research Questions	2
3. Te Tuara Primary School	3
4. Organisation of the thesis	3
CHAPTER 2: LITERATURE REVIEW	5
1. Chapter Introduction	5
2. Curriculum Integration	5
2.1 Introduction to Curriculum Integration	5
2.2 Theoretical Underpinnings of Curriculum Integration	7
2.2.1 Constructivist Theory	7
2.2.2 Theory of Curriculum Integration	8
2.3 History of Curriculum Integration	9
2.3.1 United States of America	9
2.3.2 Britain	10
2.3.3 Australia	11
2.3.3.1 Influences & History	11

2.3.3.2	<i>Introduction to New Basics in Queensland</i>	11
2.3.4	<i>New Zealand</i>	12
2.4	Models of Curriculum Integration	13
2.4.1	<i>Introduction</i>	13
2.4.2	<i>Multidisciplinary approaches</i>	13
2.4.3	<i>Integrative/ Transdisciplinary Approaches</i>	14
2.4.4	<i>A Continuum or not?</i>	15
2.5	Implementing Curriculum Integration	16
2.5.1	<i>Preparing for Curriculum Integration</i>	17
2.5.2	<i>Key Considerations and Planning</i>	17
2.5.3	<i>Models of Implementation</i>	18
2.5.4	<i>Pedagogical Strategies for Curriculum Integration</i>	19
2.5.5	<i>Curriculum Standards in Curriculum Integration</i>	19
2.6	Benefits of Curriculum Integration	20
2.7	Barriers to Curriculum Integration	20
2.8	Criticisms of Curriculum Integration	21
3.	Key Competencies in Education	22
3.1	Introduction	22
3.2	Theoretical Underpinnings of Key Competencies	23
3.3	History of Key Competencies	24
3.3.1	<i>Worldwide</i>	24
3.3.1.1	<i>The DeSeCo Project through the OECD</i>	24
3.3.2	<i>Australia</i>	26
3.3.3	<i>New Zealand</i>	26
3.4	Examining New Zealand's Key Competencies	27
3.4.1	<i>The New Zealand Curriculum Key Competencies: An overview</i>	27
3.4.2	<i>Thinking</i>	28
3.4.3	<i>Using Language, Symbols & Texts</i>	28
3.4.4	<i>Managing Self</i>	29
3.4.5	<i>Relating to Others</i>	29

3.4.6	<i>Participating & Contributing</i>	30
3.5	Implementing the <i>Key Competencies</i>	30
3.5.1	<i>Planning for key competency learning</i>	31
3.5.2	<i>Assessing the Key Competencies</i>	31
3.6	Potential Barriers for <i>Key Competencies</i>	32
4.	Queensland <i>New Basics</i>	33
4.1	What is the Queensland <i>New Basics</i> Project?	33
4.1.1	<i>Project Overview</i>	33
4.1.2	<i>Purpose of the project</i>	34
4.2	Theoretical Underpinnings of the Queensland New Basics	35
4.3	Queensland <i>New Basics</i> Findings	35
4.4	Relevance to New Zealand	36
5.	Managing the Change Process	37
5.1	Introduction	37
5.2	The Culture of Change	37
5.3	Enabling Successful Change	38
6.	Chapter Summary	39
CHAPTER 3:	RESEARCH METHODOLOGY	41
1.	Introduction	41
2.	Research Questions	41
2.1	Research Sub-Questions	41
3.	The Boundary of Investigation	42
3.1	Research Design Type	43
4.	Case Study Research Design	43
4.1	Introduction	43

4.2	Case Study Designs	45
4.2.1	<i>Descriptive Case Studies</i>	45
4.3	Data Collection in Case Study Research	46
4.3.1	<i>Interviewing in Case Study Research</i>	46
4.3.2	<i>Observation</i>	47
4.3.3	<i>Document Analysis</i>	49
4.4	Data Analysis and Reporting in Case Study	49
4.5	The Role of the Researcher	50
4.6	Planning for the Case Study Research Process	51
5.	Theoretical Considerations	52
5.1	Validity & Reliability	52
5.1.1	<i>Interval Validity</i>	52
5.1.2	<i>Reliability</i>	53
5.1.3	<i>External Validity</i>	54
6.	Ethical Considerations	54
7.	Conclusion	56
CHAPTER 4:	THE CASE FINDINGS	57
1.	Introduction	57
2.	Teacher Understanding	57
2.1	Prior to the Unit	58
2.1.1	<i>Curriculum Integration</i>	58
2.1.2	<i>The curriculum</i>	59
2.1.3	<i>Pedagogy & Expectations</i>	61
2.2	During the Unit	62
2.3	After the Unit	63
2.3.1	<i>Curriculum Integration</i>	63
2.3.2	<i>Key Competencies & The curriculum</i>	65
2.3.3	<i>Pedagogy & Expectations</i>	66

3.	Constraints	68
3.1	Prior to the Unit	68
3.2	During the Unit	68
3.3	After the Unit	69
4.	The Change Process	70
4.1	Prior to the Unit	70
4.2	During the Unit	71
4.3	After the Unit	71
5.	Student Achievement	72
5.1	Prior to the Unit	73
5.2	During the Unit	73
5.2.1	<i>Juniors (Year 0-4)</i>	73
5.2.2	<i>Seniors (Year 5-8)</i>	74
5.3	After the Unit	75
5.3.1	<i>Juniors (Year 0-4)</i>	75
5.3.2	<i>Seniors (Year 5-8)</i>	76
6.	Student Learning	78
6.1	Engagement	79
6.1.1	<i>Prior to the Unit</i>	79
6.1.2	<i>During the Unit</i>	79
6.1.2.1	<i>Juniors (Year 0-4)</i>	79
6.1.2.2	<i>Senior (Year 5-8)</i>	79
6.1.3	<i>After the Unit</i>	80
6.1.3.1	<i>Juniors (Year 0-4)</i>	80
6.1.3.2	<i>Senior (Year 5-8)</i>	80
6.2	Higher Order Thinking	81
6.2.1	<i>Prior to the Unit</i>	81
6.2.2	<i>During the Unit</i>	81
6.2.2.1	<i>Juniors (Year 0-4)</i>	81
6.2.2.2	<i>Senior (Year 5-8)</i>	82
6.2.3	<i>After the Unit</i>	82
6.2.3.1	<i>Juniors (Year 0-4)</i>	82
6.2.3.2	<i>Senior (Year 5-8)</i>	83

6.3	Transferability	84
6.3.1	<i>Prior to the Unit</i>	84
6.3.2	<i>During the Unit</i>	84
6.3.3	<i>After the Unit</i>	85
6.3.3.1	<i>Juniors (Year 0-4)</i>	85
6.3.3.2	<i>Senior (Year 5-8)</i>	85
7.	Chapter Summary	86
CHAPTER 5: DISCUSSION		87
1.	Introduction	87
2.	Getting Started	87
2.1	Teacher Understandings about Curriculum Integration	88
2.2	Teacher Understanding of Pedagogy	90
2.3	Teacher Knowledge of the Curriculum	92
2.4	Teacher Understanding of Assessment	94
2.5	Constraints and Influences on the School	95
2.5.1	<i>The Graduate Cluster</i>	95
2.5.2	<i>The Ministry of Education Policies and Changes</i>	98
3.	Letting go of Achievement Objectives	98
3.1	Teacher Understanding of Pedagogy	99
3.2	Teacher Understanding of the Curriculum	101
3.3	Teacher Expectations and Philosophies	103
3.4	Teacher Fear	104
4.	Encouraging Transferability	105
4.1	Danger of Over-packing	106
4.2	Shifts in Teacher and Student Control	107
5.	Impact on Students	108
5.1	Student Achievement	109

5.2	Student Learning	110
5.2.1	<i>Engagement</i>	110
5.2.2	<i>Transferability</i>	111
5.2.3	<i>Higher Order Thinking</i>	112
6.	Towards a Curriculum Integration Model	112
6.1	The Model: <i>Rich Learning</i>	113
6.1.1	<i>Deeper Understandings</i>	114
6.1.2	<i>Learning Dispositions</i>	115
6.1.3	<i>Significant Questions</i>	116
6.1.4	<i>Context</i>	116
6.1.5	<i>Deeper Knowledge</i>	117
6.1.6	<i>Productive Pedagogies</i>	117
6.1.7	<i>Culminating Rich Tasks</i>	117
6.2	Planning a Unit of Learning	118
6.3	Supporting Resourcing	119
6.3.1	<i>Long Term Plans</i>	120
6.3.2	<i>Rich Learning Overview</i>	120
6.3.3	<i>Shared Development of Learning Dispositions</i>	120
7.	Conclusions of the Study	121
	REFERENCES	123
	APPENDICES	134
1.	The Queensland <i>New Basics</i> Model	135
2.	The Mayer Key Competencies	136
3.	Interview Schedules	137
i.	Teacher Pre-Interview Schedule	137
ii.	Teacher Post-Interview Schedule	138
iii.	Student Post-Interview Schedule	139
4.	School Observational Matrix Tools	140
i.	School Observational Matrix Tool – Teachers	140
ii.	School Observational Matrix Tool – Students	141

5. Research Plan	142
6. Consent Form Samples	144
i. Teacher Consent Forms	144
ii. Student Consent Forms	145
7. Information Sheet Samples	146
i. Information Sheet Sample – Students	146
ii. Information Sheet Sample – Teachers	148
8. Teacher Observations During the Unit	151
9. Student Observations During the Unit	152
10. <i>Rich Learning</i> Collaborative Plan – A World of Mystery	153
11. Figure for Deeper Understanding – Example	154
12. Planning Template	155
13. Learning Journey Template	157
14. Long Term Plan	159
15. Figure linking Learning Dispositions with Deeper Knowledge and Productive Pedagogies – Example	160

LIST OF FIGURES AND TABLES

Figures

2.1	Comparisons of key competencies in New Zealand with DeSeCo	28
2.2	Comparisons of New Zealand's <i>Key Competencies</i> with the Queensland <i>New Basics</i> referents.	36
3.1	Deeper Understandings and Deeper Knowledge focus for unit of research	42
5.1	<i>Rich Learning</i> Model	113
5.2	Deeper Understandings	114
5.3	Learning Dispositions	115
5.4	<i>Rich Learning</i> Planning Model Overview	119

Tables

4.1	Individual Teacher Summary	58
4.2	Curriculum Integration: Teacher Understanding Prior to the Unit	59
4.3	Key Competencies & the Curriculum: Teacher Understanding Prior to the Unit	60
4.4	Teacher Pedagogy & Expectations: Teacher Understanding Prior to the Unit	61
4.5	Curriculum Integration: Teacher Understanding After the Unit	64
4.6	Key Competencies & the Curriculum: Teacher Understanding After the Unit	65
4.7	Pedagogy & Expectations: Teacher Understanding After the Unit	67
4.8	Summary of Changing Student Achievement	78

Chapter One

INTRODUCTION

This thesis is representative of a journey that, at its core, aimed to design an effective model of curriculum integration that incorporated the revised curriculum being implemented in New Zealand and led to enhanced achievement. In order to do so, the gap between theory surrounding effective pedagogy and actual practice needed to be overcome, change needed to be implemented, reviewed and sustained; and teacher understanding, both theoretically and practically, greatly developed. This could only have been achieved with the assistance of three teachers and their fantastic students and for this reason, the pseudonym chosen for the school was *Te Tuara*, meaning to assist.

This is one of few studies in New Zealand seeking to develop curriculum integration. The outcomes of this research have begun to provide some sound insight into effective curriculum integration design in New Zealand, giving credence to theory and yet contributing to it, specifically in a New Zealand context. Through supporting the findings of this thesis, making adaptations if necessary and further development of the model formed, readers may be able to further strengthen the link between theory and practice for effective curriculum integration in New Zealand.

This chapter provides the reader with a background to the study, research questions, contextual information for the case study school and overview of thesis.

1. Background to the study

While New Zealand rates well in student achievement when compared with other OECD countries, authenticity, purpose, transferability of, and engagement in learning are being identified as key factors for why many New Zealand students are under achieving, especially for Maori and boys (Ministry of Education, Dec 2007; Ministry of Education, 2009) . New Zealand's 2007 revised curriculum aimed to help provide the foundations for enhanced achievement for all learners, offering pathways to tailor the curriculum to

school community's needs and employ more effective pedagogical practice. New Zealand's *Key Competencies* were designed to provide greater focus on students as lifelong learners. The Ministry of Education also identified in the revised curriculum, curriculum integration design as developing more authentic, holistic learning (Ministry of Education, 2007; Hipkins, 2007). Curriculum integration was also identified by Dowden (2007a) as an effective means for enhancing New Zealand student achievement, especially for Maori, however to this point, had rarely been researched in a New Zealand setting, and even more rarely through a descriptive case study on the journey of one school.

At the same time, the Ministry of Education had set up the *Extending High Standards Across Schools (EHSAS)* project with the aim of providing clusters of schools the opportunity to greatly develop achievement through different, theoretically sound, innovative approaches.

It was timely then that *Te Tuara School* was a part of an *EHSAS* cluster, identified under the following pseudonym, *Graduate Cluster*, which had two converging goals: to develop the use of higher order thinking goals; and to implement the Queensland *New Basics Rich Tasks*. With the revised curriculum and involvement in the cluster, experimenting with a model of curriculum integration, the impetus for this study was provided.

2. The Research Questions

This study aims to answer the following research question...

How can a model of curriculum integration be used to form a basis for the effective development of, and implementation of, the New Zealand curriculum's key competencies to enhance student achievement in all learning?

To this end the research sub-questions are outlined below:

1. What is curriculum integration?
2. What are the New Zealand *Key Competencies*?
3. How do the Queensland *New Basics & Rich Task* models enable a basis for curriculum integration that includes the *Key Competencies* in New Zealand?
4. How can curriculum integration be used to develop the *Key Competencies*?

5. How can curriculum integration and the *Key Competencies* be effectively implemented to lead to enhanced student achievement?

3. Te Tuara Primary School

The school was selected as the researcher was currently employed there as a full time teacher, leading the *EHSAS Graduate Cluster* development in the school. It is a decile 5 North Island semi-rural school of approximately 60 students of whom approximately 20% are identified as Maori. There were four mainstream classes at the time of the study.

The issue of identifying and monitoring the effectiveness of the school's involvement in the cluster had been noted previously and, through negotiation with the Principal and teachers, it was agreed that the research on the school's developing model of curriculum integration could take place with interviews of teacher participants before and after the study; observations of teacher and student participants while engaged in learning through the curriculum integration model during the study; and group interviews of the student participants at the end of the study.

Overall, the researcher carried out nine interviews and six observations, with two further observations being conducted by an outside researcher and one interview being carried out by the office administrator; these having involved student participants within the researcher's own classroom. Documentation was also collected, including the school's developing documentation of the model, teacher planning and samples of children's work.

4. Organisation of the thesis

Chapter one has introduced the need for the research investigation, the research questions and provided contextual information for the case study school. The next chapter, chapter two reviews the literature; analysing the definitions, history and varied models of curriculum integration as well as the development of New Zealand's *Key*

Competencies and the expected implications and impact of these on teaching and learning. The Queensland *New Basics* project: what it entailed and its success is examined and process of change is also considered.

Chapter three presents the research methodology, analysing the researcher's choice for research design and outlining the boundaries of the study.

Chapter four shares the research findings and highlights the emerging themes of the study. The findings are validated through the triangulation of data from the interviews, observations and document analysis and extracts of these are given to support these findings.

The final chapter, chapter five, discusses the emergent themes listed below:

- Getting started
- Letting go of the achievement objectives
- Encouraging transferability
- The impact on students
- Towards a model of curriculum integration

Each theme is explained briefly and linked to the literature to bridge theory and practice. Finally, the validity and limitations of the study are discussed and recommendations for future research given.

Chapter Two

LITERATURE REVIEW

1. Chapter Introduction

Curriculum integration is at the heart of this research so it is necessary to examine various interpretations and models as well as implications for this study. The *Key Competencies*, as part of the revised New Zealand curriculum, will also be explored in relation to international examples their potential application in New Zealand. The impetus for this study stemmed both from the revised curriculum and the school's involvement in the *EHSAS Graduate Cluster* as part of the Ministry of Education's *EHSAS* project, which focused on developing *Rich Tasks* from the *Queensland New Basics* project. As such, the *New Basics* will also be analysed.

2. Curriculum Integration

2.1 Introduction to Curriculum Integration

Recent OECD studies show that countries around the world are currently reviewing their education systems: one of the key approaches emerging is the notion of curriculum integration (Carr, McGee, Jones, McKinley, Bell, Barr, & Simpson, 2000). Curriculum integration is a method of curriculum design that links learning in different curricula areas through a common theme so that instead of learning science, a student may be learning science, social science and technology concepts through the common issue of an energy crisis. The aim of curriculum integration is to create contexts for learning that are meaningful and authentic as learning is naturally developed through a range of curricula areas, rather than isolated to concepts within one subject area.

Curriculum integration has a long history. However, it has been a history that Dowden (2007a; 2007b) describes as plagued by criticism and doubt as it has been thought of "...as

an off-beat approach espoused by backward-looking progressives," (Dowden, 2007a:4). Despite long debates over its definition, models of implementation and relevance to lifelong learning, Beane (1997) and Dowden (2007a; 2007b), advocates of curriculum integration, argue that curriculum integration has been overwhelmed by the traditional and dominant entrenchment of the separate subject approach.

Loepp (1999) suggests that, in our changing world, the focus should be on moving to relevant and meaningful curriculum designs. Supporting this, Ellis (2005) argues that the impetuses for the move to an integrated curriculum are clear and threefold:

1. *The knowledge explosion is real and there is simply too much information to be covered in the curriculum;*
2. *Most school subjects are taught in isolation, and students never are able to make the connections;*
3. *Curriculum integration is designed around world problems and concerns students have about themselves and their world."* (Ellis, 2005:157)

Curriculum integration has potential to enhance student achievement. However it is based on complex theoretical and historical foundations, with various interpretations and models. The next section of the literature review explores these multiple facets.

First, the theoretical underpinnings of curriculum integration are examined in section 2.1.2 and this is followed by examining the historical roots of curriculum integration internationally and in New Zealand in section 2.1.3. Next, definitions and models of curriculum integration are considered in section 2.1.4, followed by careful inspection of how to implement curriculum integration in section 2.1.5. The final sections (2.1.6, 2.1.7, and 2.1.8) discuss the benefits, barriers and criticisms of curriculum integration.

2.2 Theoretical Underpinnings of Curriculum Integration

2.2.1 *Constructivist Theory*

At the heart of curriculum integration are key ideas stemming from the notions of constructivist theory (Audet, 2005a; Bartlett, 2005; Loepp, 1999). Led by world renowned theorists such as Piaget and Vygotsky, constructivist learning theories are based on cognitive theories that believe that children actively construct knowledge as they engage in learning experiences: rather than absorb or internalise them through transmitted knowledge methods (Bartlett, 2005). This theory emerged, as curriculum integration did, in the early parts of the 20th century and the work of Dewey is well recognised for its constructivist learning principles.

Such a learning theory argues that educators must ensure they provide children with experiences that activate their prior knowledge and help them to make connections so that they can create new meanings, understandings and knowledge in real and authentic contexts (Audet, 2005a; Bartlett, 2005). Vygotsky's work goes further and says learning in experiences should be socially constructed, highlighting the importance of creating shared meanings and understandings (Berk, 2002). In essence, curriculum integration draws directly from these principles and provides the ideal forum for such learning to occur.

To this end, Bartlett (2005) suggests that the role of the teacher is crucial in a constructivist learning environment as they not only instruct, as in traditional curriculum delivery methods, but facilitate learning opportunities, connections, discussion and metacognitive thinking; model and guide learning; and empower children to manage their own learning. Curriculum integration provides the flexibility and collaborative relationships between children and teachers to facilitate this type of learning approach.

Supplementary to this, curriculum integration also allows for the recognition that knowledge is not fixed but is shaped by the context in which it is learnt and the different meanings created through experiencing it (Arnold & Ryan, 2003). Drake (1998) goes further, explaining that deeper understanding is developed as children learn to transfer

learning by making connections across different disciplines of knowledge and in real life experiences. Children experience opportunities for critical, reflective, creative and intuitive thinking and, ultimately, the development of metacognition (Drake, 1998).

2.2.2 *Theory of Curriculum Integration*

Beane (1997), Dowden (2007a; 2007b) and O'Steen, Cuper, Spires, Beal & Pope (2002) explain that the basis of curriculum integration theory stems from the work of Dewey's work on organic curriculum, which focused curriculum design on the student through the context of personal and social integration.

Beane (1997) describes curriculum integration, theoretically, as involving four core components of integrations:

- Integration of experiences: recognising that we learn through integrating our experiences into our own understandings and that these are based on our past experiences.
- Social Integration: concerning the ideals of creating a democratic society and focusing on the need to give opportunities for learners to share in common experiences and work collaboratively to organize a curriculum for learning.
- Integration of knowledge: concerning how learners use and organize information so that it can be integrated "*...in the context of the real problems and issues.*" (Beane, 1997:7).
- Integration as Curriculum Design: organizing the curriculum around both personal and social issues of importance; integrating knowledge through real problems; and designing curriculum to develop learning to help better understand and create solutions for the problem so that meaning-making and a democratic approach to life are enhanced (Beane, 1997).

Beane (1997) also discusses the theoretical tensions surrounding curriculum integration and the disciplines of knowledge. It is often thought that curriculum integration is implemented at the expense of the integrity and rigour of the different knowledge disciplines (Audet, 2005a; Beane, 1997; Dowden, 2007a; 2007b; Drake, 1998). Beane

(1997) defines disciplines of knowledge as fields of inquiry that focus on a particular part of the world. The disciplines are seen as fluid areas that recognise the dynamic nature of knowledge and the relationships between them. In contrast, Beane (1997) suggests that the separate subjects seen in school curriculums are a means for fixing knowledge and boundaries around subjects, contrary to recent theories about the nature of knowledge and learning. Curriculum integration is not about removing the veracity of the disciplines of knowledge but is a means for using and drawing on these in a purposeful way as children work through a collaborative curriculum that examines problems and issues of life as its themes.

2.3 History of Curriculum Integration

While the implementation of curriculum integration may be a new endeavour for some educators, the concept of curriculum integration is not new (Beane, 1997; Dowden, 2007a, 2007b; Drake, 1998; Ellis, 2005; Hinde, 2005). Curriculum Integration has its roots in the Progressive Movement that began in the United States of America in the early 1900s and stemmed from the work of Dewey (Beane, 1997; Dowden, 2007a, 2007b). These sections firstly examine the history of curriculum integration, and its different developments, through the United States, Britain and Australia as these countries have influenced New Zealand's education system, and secondly discuss the development of curriculum integration in New Zealand.

2.3.1 *United States of America*

The United States is widely credited with having initiated the first curriculum integration approaches to teaching (Beane, 1997; Dowden, 2007a; 2007b; Drake, 1998). The Progressive Movement, a response to the systemic issues faced in the United States through the depression of 1896, led to a review of approaches to education (Dowden, 2007a). Emerging from this movement was Dewey's 'organic curriculum', focused on the notions of personal and social integration, and democratic education. Further development of curriculum integration, in this manner, was as a result of four key factors: the industrial revolution; the child-centred movement; the democratic movement;

and the influence of the progressive movement (Beane, 1997). Alongside this, the 'multidisciplinary' approach was also being developed through the late 19th century ideas of correlation from German philosopher, Johan Friedrich Herbart.

The integrative approach continued to grow and develop, particularly through the work of Meredith Smith, William Kilpatrick, L. Thomas Hopkins, and the Eight Year Study from 1933-1941 up until the 1950s (Beane, 1997). However, from the 1950s to 1980s, both the integrative and multidisciplinary approaches suffered a gradual decline due to attack from right wing and classical humanist groups, reflective of the changing ideas due to the cold war (Beane, 1997; Dowden, 2007b). Since then curriculum integration has been subject to renewed interest (Dowden, 2007a; 2007b; Drake, 1998; Ellis, 2005; & Vars & Beane, 2000). This renewed interest was primarily in multidisciplinary approaches to curriculum integration and was a result of the impetus created by the work of Hayes Jacobs and Shoemaker in the late 19th century (Dowden, 2007a; 2007b). It is this approach to curriculum integration that is most commonly found in United States classrooms today.

2.3.2 Britain

Britain, as former sovereign country to New Zealand, has greatly influenced New Zealand's education systems and policy. Dowden (2007a) describes two key waves of education in British education. The first wave, 'the New Education' movement, began in the 1920s after World War I and was hugely child-centred and primarily saw the introduction of new schools that were offered to the privileged class as an alternative to normal public school education (Dowden, 2007a).

The second wave of education reform in Britain occurred in the 1960s and this was where the concept of curriculum integration first began to gain attention in Britain, particularly for those children considered to have average or below average ability (Dowden, 2007). The British focus on curriculum integration reflected a multidisciplinary approach, designed to fuse together the separate subject areas (Dowden, 2007a). Dowden (2007a) suggests this design neglected to include the social integration aspect; a core part of the integrative approach in the United States and failed to create a momentum of interest

towards developing the child-centred notions of curriculum integration as was in the United States. The result of this was that Britain failed to contribute anything of significance to the concept of curriculum integration previously developed through the American work (Dowden, 2007a).

2.3.3 *Australia*

2.3.3.1 *Influences & History*

Australia, like the United States, does not currently have a national curriculum but has state-governed education systems. Despite this, curriculum integration is being widely promoted as the new strategy in Australia for current reform (Wallace, Sheffield, Rennie & Venville, 2007).

Dowden (2007b) and Wallace et al. (2007) discuss how Australia, like many other countries, has been plagued with educational reforms that have been patchy at best and difficult to sustain over time, and Dowden (2007b) suggests that this is due to ill-developed curriculum design at the theoretical stage, reflecting poor understanding of curriculum integration.

In the face of this though, Australian reform appears to be focusing on the development of the negotiated curriculum, whereby students jointly negotiate what is to be the focus for learning (Dowden, 2007b; Wallace et al., 2007). This is reflective of the core integrative approach to curriculum integration described by Beane (1997) in that it seeks to stem the learning from the student's own interest and develop a collaborative relationship between students and teachers, and Dowden (2007b) points out that this is an important first step for Australia in its move towards curriculum integration.

2.3.3.2 *Introduction to New Basics in Queensland*

As part of the reorganisation of curriculum in Australia, Queensland State Education conducted a three year trial of new curriculum design, based on curriculum integration and constructivist ideas, called the *Queensland New Basics* from 2003 to 2006 (Queensland Government, 2009) (*see appendix 1*). The new curriculum design was devised of three key components: the New Basics – a set of five key referents similar to New Zealand's key

competencies; the Productive Pedagogies – a toolbox of effective pedagogical practise, tools and strategies; and the Rich Tasks, which were culminating assessment tasks that stemmed from the New Basics and involved the use of Productive Pedagogies in the journey of learning towards the Rich Task piece (Queensland Government, 2009). In essence, the Queensland New Basics curriculum design was an adapted design of curriculum integration and it is this curriculum trial which is being developed within this thesis' study for a New Zealand context. This will be further discussed in section 4.

2.3.4 *New Zealand*

As previously mentioned, Britain has had the most influence on New Zealand's educational systems and development. The 'New Education' wave had significant impact on New Zealand's educational reform in the 1920s and 1930s, helping New Zealand education become much more child-centred but it was not until after the 1940s, that the notions of curriculum integration were first introduced to New Zealand (Dowden, 2007a).

The Thomas Report of 1943 advocated both the U.S.A. Progressive Movement and the British New Education movement and recommended the use of curriculum integration as a means for reforming education in New Zealand (Dowden, 2007a). This was also reflected in the later Currie Report in 1962 (Bartlett, 2005). At this time, New Zealand began to implement a variety of innovations based on these ideals such as model cottages and school farms, as well as in New Zealand's native schools. These innovations contributed to New Zealand's reputation for

"...producing world-class examples of curriculum integration," (Dowden, 2007a:81).

The Freyberg Project in the late 1980s brought refreshed momentum to the notions of curriculum integration in New Zealand (Dowden, 2007a; Freyberg Integrated Studies Project 1989). The project was innovative in the sense that it combined a variety of different curriculum integration approaches and was attuned to the needs of the students (Dowden, 2007a; Freyberg Integrated Studies Project 1989). Since then, other schools, such as Kuranui School in the Wairarapa and the Normal Schools Association, have

begun to investigate, experiment with and implement curriculum integration into schools, particularly at the turn of this century (Bartlett, 2005; Boyd & Watson, 2006).

2.4 Models of Curriculum Integration

2.4.1 Introduction

It has been widely argued that a major reason why curriculum integration has not been adopted by many schools and educators is the confusion surrounding what curriculum integration is and the many different models implemented (Beane, 1991; 1992; 1997; Dowden, 2007a; 2007b; Hinde, 2005; Vars & Beane, 2000).

Key educators recognised for their work in curriculum integration, such as Beane, Hayes Jacobs and Drake, fail to agree on a definition of curriculum integration (Beane, 1997; Dowden, 2007a; 2007b; Drake, 1998). This section examines the different models considered within the context of curriculum integration and clarifies some of the distinctions between the different types.

2.4.2 Multidisciplinary approaches

In the multidisciplinary approach, curriculum design typically begins with a theme that acts as a thread through each different subject area, but the knowledge from each subject or discipline is still taught in isolation of other disciplines of knowledge (Beane, 1997; Drake, 1998).

Drake (1998) argues that each discipline has specific knowledge, processes and skills involved and specific content that is linked to it. As such, assessment and reporting on units in this curriculum design is specific to each discipline. Bartlett (2005) describes this as the most commonly used approach in New Zealand as it helps to overcome some of the burdens associated with time to teach each subject. This is true also worldwide, as the multidisciplinary approach appears easier to implement in existing school structures (Dowden, 2007a; 2007b; Erickson, 1998).

However, Dowden (2007a) questions the ethics of this approach, suggesting that it ignores social diversity and developmental needs and encourages the notions of a fixed, official knowledge base. In addition, Erickson (1998) also criticises this approach as it does not allow for connections between the disciplines to be easily made and built upon, allowing only lower order thinking development. Drake (1998) discusses the need for a culminating activity to help draw together the connections between the disciplines.

2.4.3 Integrative/Transdisciplinary approaches

Drake (1998) defines the transdisciplinary approach as transcending the disciplines and embedding them within learning as a core theme or issue. Drake (1998) describes what is most dually referred to as the integrative or transdisciplinary approaches, depending on the theorist. The terms seem to be a matter of semantics, so for the purpose of clarity, it will be referred to only as the integrative approach throughout this study.

Beane (1997) describes the integrative approach as a necessary integration of knowledge, social integration, integration of experiences and integration of curriculum as a design. Dowden (2007a; 2007b) highlights that it is the inclusion of social integration that distinguishes Beane's (1997) approach from other integration models. Beane (1997) uses the concept of organizing centres to provide the themes for learning in curriculum integration and these themes are drawn from the children's own concerns about themselves and their wider world. Planning for the integrative approach begins with identifying the big ideas, concepts and understandings related to the organizing centre and activities that would help to explore these (Beane, 1997; Ellis, 2005). Potential sources for developing organizing centres are numerous but Beane (1997) alerts us to the original intentions of the integrative approach, suggesting that curriculum integration should always explore organizing centre themes that represent the issues and concerns of children about themselves and their world. To aid with this, Beane (1997) suggests the need to collaborate with students in the curriculum by asking two questions:

- What questions, concerns or issues do you have about yourself?
- What questions, concerns or issues do you have about the world?

Educators can then ascertain clear connections and themes between the personal and social concerns of the children and use these as the basis for extending learning.

It is this approach to curriculum integration which Dowden (2007a) suggests is the most appropriate method for New Zealand schools as its collaborative planning process and authentic contexts would better meet the needs of the range of individual needs of children in New Zealand, particularly Maori and Pasifika children. However, this approach continues to be the least implemented in schools in New Zealand. The existing structures of New Zealand's education system are very subject oriented and the integrative approach requires a complex change in thinking in order to effectively use to design a new curriculum and a new delivery method (Dowden, 2007a; Erickson, 1998; O'Steen et al., 2002).

2.4.4 A Continuum or not?

Perhaps almost as widely argued as the definition of curriculum integration, is whether or not there is a continuum on which the different models of curriculum integration sit. Dowden (2007a; 2007b) identifies two main traditions of curriculum integration: the multidisciplinary approach and the integrative approach, despite Beane's emphatic argument in 1997 that the only type of curriculum integration from the progressive movement in the United States is the integrative approach. In contrast, Drake (1998), Erickson (1998), the Freyberg Integrated Studies Project (1989), Hayes Jacobs (1991), Hinde (2005) and O'Steen et al. (2002) all discuss the notion of a continuum for the different types of curriculum integration. Drake (1998) identifies six types on the curriculum integration continuum:

1. The traditional separate-subject approach.
2. Fusion, where one topic is studied in several different subject areas.
3. Curriculum integration within one subject.
4. The multidisciplinary approach where all subjects are connected through a theme but taught within the separate subjects.
5. The interdisciplinary approach, characterised by subjects being interconnected through a common theme and the connections between the subjects are made explicit to the students.

6. The integrative approach, which begins from the issues or concerns students have about themselves and their world and the disciplines of knowledge are embedded within them.

Despite this continuum, Beane's argument is powerful. As noted by Beane (1997), there are four key areas for integration: experiences, social, knowledge, and curriculum design and to neglect any one of these is to possibly limit the authenticity and development of real life learning. There is a place for multidisciplinary and interdisciplinary approaches though. Considering Beane's integrative approach as the true form of curriculum integration, the continuum above would seem, more realistically, to identify multidisciplinary and interdisciplinary approaches as the progressive steps towards achieving curriculum integration, with integration being achieved once the last step is taken.

The *Queensland New Basics* model that has formed the basis of the model used in this study, strictly speaking, is at the fifth step: the interdisciplinary approach described by Drake (1998) above and thus, requires further development to reflect true integrative curriculum integration.

2.5 Implementing Curriculum Integration

This section considers the literature around how to implement curriculum integration: that is, the key considerations involved; different models that can be used; some of the key pedagogical strategies that can be implemented to enhance curriculum integration and how to link the national curriculum objectives or standards into curriculum integration; specifically, through the integrative approach to curriculum integration. First we will look briefly at the processes that some educators have worked through to prepare their schools and classrooms for curriculum integration.

2.5.1 Preparing for Curriculum Integration

The process of change will be looked into more extensively in section 5, however, Drake (1998), Hayes Jacobs (1991) and Miller and Drake (1995) describe developing curriculum integration in schools as being a three year process; Hayes Jacobs (cited in Brandt, 1991), Loepp (1999) and O'Steen et al. (2002) suggest that implementing a model of curriculum integration will be a gradual and idiosyncratic process, requiring time, effort and support on the part of both teachers and administrators. Hayes Jacobs (1991) identifies four phases in setting up curriculum integration in schools consisting of researching and educating staff; setting up school systems and planning for curriculum integration; implementing the integration; and finally evaluating, reflecting and sustaining the curriculum integration.

Time is perhaps the most important factor as, for many, curriculum integration requires a significant shift in their teaching philosophy. Time is needed to work through these new beliefs, to allow for development of new professional and common understandings about curriculum integration, to plan and regularly reflect, and to meet with others and discuss successes, concerns or potential problems (Drake, 1998).

2.5.2 Key Considerations and Planning

Important considerations for implementing curriculum integration are the organisation of the learning around developing skills, collaborative planning between teachers; and between teachers and students, involving student choice and decision-making on the what, how, and why of their learning, and making connections explicit (Bartlett, 2005).

Beane (2005) explains that to make teaching democratic, students must be involved in the planning, stemming learning from their own questions about themselves and their world. These questions about themselves and their world lead to issues for inquiry with key understandings and questions to guide learning that is scaffolded and culminates in an activity that allows students to demonstrate all their learning, an important aspect that provides authentic assessment and demonstration of all learning.

2.5.3 *Models of Implementation*

Part of the continued confusion over curriculum integration is the multiplicity of models and designs in circulation. This section briefly describes some of the better known models and links them to the multidisciplinary or integrative approaches.

- **The Webbed Model:** Characterised by teachers selecting a theme and then seeing what understandings can be developed in each separate subject through this theme: multidisciplinary design (Drake, 1998).
- ***The Hayes Jacobs (1989) model:*** As with the webbed model but it begins with a teacher-selected organizing centre and essential questions guide the learning in each subject area: multidisciplinary design (Hayes Jacobs, 1991).
- **Concept Based Integrated Units with Essential Questions:** Also similar to the models above, this makes connections through the identification of essential understandings and use of essential questions (Erickson, 1998): interdisciplinary design.
- **Problem-based learning (PBL):** Begins with a problem and specifically develops problem-solving as students work to solve the problem through a variety of disciplines and develop reasoning, collaboration and persistence (Audet, 2005a; Drake, 1998): integrative design.
- **The Story Models:** These use existing historical, problem centred literary stories and encourage meaning making through personal, social and global contexts and enhance understanding through a constructivist approach (Drake, 1998). The disciplines embedded in the learning can be decided in collaboration with students: integrative design.
- **Beane's Integrative Model:** begins with the issues and concerns students have about themselves and their world and then creating themes around these (Beane, 1997; 2005). It integrates experiences, social aspects, knowledge and curriculum design and should integrate personal, social, explanatory and technical knowledge (Beane, 1997): integrative design.

2.5.4 Pedagogical Strategies for Curriculum Integration

There are many pedagogical strategies that are noted as being effective in developing learning in curriculum integration. This section briefly investigates those most commonly used.

- **Collaborative Learning:** A central tenet of the integrative approach to curriculum integration, collaborative learning involves groups of students, and at times the teacher, working together through a variety of learning activities to jointly improve their understandings or develop their learning (Bartlett, 2005).
- **Inquiry-based learning:** This stems from student's own questions and involves the research process towards gathering information, sorting and processing the information, selecting information to report on and present, and evaluating the process (Bartlett, 2005).
- **Essential or Significant Questions:** Erickson (1998) stresses the importance of essential questions as a means to guide learning and make connections between different concepts of learning. Essential questions can also provide the focus for the key understandings, standards or concepts being learnt through the unit.
- **Bloom's Taxonomy:** Specifically Bloom's Cognitive Taxonomy which articulates the different levels of thinking development. There are six stages of development from lower order thinking tasks to higher order thinking tasks of analysing, evaluating and creating. Drake (1998) advocates the use of this taxonomy as a means to structure the development of learning through curriculum integration units.

Drake (1998) also suggests the use of Dagget's Taxonomy, Gardner's Multiple Intelligences, Brain-Based education, storytelling, graphic organisers, and metaphor as other potential strategies to use for structuring learning development or enhancing learning activities.

2.5.5 Curriculum Standards in Curriculum Integration

Standards, objectives, outcomes, competencies... there are various names for the expectations of curriculums (Drake, 1998). In New Zealand we refer to them as

achievement objectives (Ministry of Education, 2007). However Drake (1998) identifies four different types of standards: content; performance; opportunity-to-learn; and life-long.

Drake (1998) articulates the concern that when standards are created we are essentially deciding what is worth knowing, and while content or performance standards focus on the idea of unmalleable notions of knowledge, in truth, knowledge is dynamic and is currently expanding at exponential rates. Thus, it would seem, such standards developed through a life-long lens, would be more receptive to the changing nature of knowledge while providing a focus for curriculum development that transcends disciplines of knowledge and reflects authentic and real-life contexts, providing transferability to other contexts. Such standards would also appear to be the perfect platform for developing organizing centres or themes for curriculum integration and New Zealand's key competencies are congruent with this type of standard.

2.6 Benefits of Curriculum Integration

The benefits of curriculum integration have been widely investigated and various benefits have been claimed. Wallace et al (2007) have noted the benefit of increased engagement due to the relevance of the learning and the meaning created. Beane (1992; 1997) notes the benefits of better relationships between students, and students and teachers; a better sense of community; higher order knowledge development; increased application of knowledge; and collaborative planning. Terry (2008) also highlights the inclusiveness of curriculum integration, suggesting that it is not only of benefit to regular students but also those who are gifted, and William and Reisberg (2003) highlight the benefits for those of low-ability and special needs also.

2.7 Barriers to Curriculum Integration

Dowden (2007a; 2007b) describes the major barriers to curriculum integration, at a national level, as being reflective of the current conservative political perspectives

plaguing the United States, Australia and New Zealand; as well as the continuing uncertainty and perplexity of curriculum integration itself.

At a more local level for schools, Drake (1998) and Miller and Drake (1995) highlight key barriers to curriculum integration as being extensive but surmountable. Within schools where subjects are taught by separate teachers as in most high schools, timetabling becomes a key issue and new approaches to how classes and learning are structured have to be considered. Staff resistance is also a barrier (Bartlett, 2005; Carr et al., 2000; Drake, 1998). Professional development, collaborative planning and support and extra time helps to overcome this barrier. Community and parental resistance can also be a barrier. Informing parents and the community about curriculum integration, and ensuring that teachers articulate to both students and parents the focuses for learning and the key concepts being developed, will help parents and the wider community become more confident about curriculum integration (Bartlett, 2005; Beane, 1997).

Other barriers to contend with are identified by Bartlett (2005) and Drake (1998) as ensuring the integrity and quality of the knowledge and the integration program, finding adequate resourcing, developing core subject learning adequately, and accessing and using adequate assessment procedures. Such barriers will take time to conquer but regular evaluation, reflection, communication and adaptation should help to work through these; highlighting the importance of a managed system of change within schools that supports and develops teachers and students through curriculum integration (Ellis, 2005).

2.8 Criticisms of Curriculum Integration

Beane (1997) and Ellis (2005) attribute the most obvious criticism of curriculum integration as coming from educational traditionalists who argue that due to collaboration with students, the learning being developed is random and, potentially, haphazard, failing to be of any worth to students. Beane (1997), Ellis (2005), Loepp (1999), and Miller and Drake (1995) also discuss the concern of artificial integration where

teachers force integration so it lacks depth and integrity. All of these educators agree that not everything should be integrated.

Audet (2005b) and Beane (1997) suggest teachers may face criticism as they work to overcome dominant school structures and opinions, face challenges to their teaching philosophy and spend extensive amounts of time preparing and organising. Criticisms also stem from the voices of parents, who, not understanding curriculum integration, feel that it is a means of experimentation that can potentially fail and lead to crucial loss of time in children's learning (Beane, 1997; Drake, 1998).

Schug and Cross (1998) argue vehemently against curriculum integration suggesting that many of the beliefs advocating curriculum integration are simply myths, especially in regards to comparing it to the separate subject approach. Brophy and Alleman (2002) argue that curriculum integration, while sometimes necessary and useful, is often misused. They suggest that curriculum integration can often lack educational value, be full of 'busy work', distort content knowledge, have task expectations that are difficult at best, and expect students to do things about which they have no prior knowledge or understanding and are therefore likely to fail.

3. Key Competencies in Education

3.1 Introduction

Rychen (2003) explains that the purpose of competencies is to allow individuals to successfully fulfil the many different roles that they may be called upon within their lives. They are not an end in themselves, but if students are provided with the learning opportunities needed to develop these, they are useful tools that can help lead students to effectively meet all of life's challenges (Rychen, 2003).

"Competency is the ability to carry out a complex task that requires the integration of knowledge, skills and attitudes... Competencies enable people to perform effectively in a particular environment," (Jordan, Carlile, & Stack, 2009: 203)

This section will consider the theoretical underpinnings of key competencies; the history of them and development across the world and in New Zealand; the New Zealand *Key Competencies* in the revised curriculum, and their practical application as well as their links to the *Queensland New Basics* project. Finally, potential benefits, barriers and criticisms will be considered.

3.2 Theoretical Underpinnings of the Key Competencies

The development of key competencies reflects the current changes in educational focus from the traditional curricula development through the individual disciplines. It is widely recognised that knowledge is dynamic, and the move to focus on key competencies indicates the new impetus to understand that knowledge is dynamic and naturally draws across disciplines (Drake, 1998; Kearns, 2001; Ministry of Education, 2005; Ouane, 2003; Trier, 2003). Competencies typically combine related attitudes, values, knowledge, and skills, progress on a continuum, relate to given contexts and can be learned and taught (Gilomen, 2003c).

At the theoretical base of the concept of key competencies are theories of learning such as sociocultural theory and situated learning theories (Carr, 2006; Hipkins, 2006; Kearns, 2001). Vygotsky's sociocultural theory, where knowledge and understanding is co-constructed through authentic learning experiences that involve interactions with others, provides theoretical validity to the concept of key competencies and their development across the disciplines and over time (Bartlett, 2005; Hipkins, 2001). Situated learning theories go further: learning occurs within certain contexts and this learning can only be transferred when learners have multiple opportunities to experience the same learning in a variety of different situations and contexts (Arnold & Ryan, 2005). Situated learning theory posits the importance of transference of learning and provides the premise for

such transferability to occur, especially for generic understandings that apply to all aspects of life and learning.

Key competencies, as designed in the reviewed New Zealand curriculum, provide a crucial facet and focus for life-long learning in such a manner, enabling multiple opportunities for learning development and transference of this to other contexts (Brink, 2002). Gonczi (2003) suggests in order to seriously develop key competencies; a change in previous assumptions about learning is needed and situated learning, constructivist based theories of learning help to support this.

3.3 History of Key Competencies

3.3.1 Worldwide

Jordan et al (2009) suggest that the first competency-based training were first used in the United States after World War II. It was not until; however, the late 1980s and early 1990s, that Britain, Australia, the United States and New Zealand began to consider defining key competencies in educational settings (Kearns, 2001). Through this, Kearns (2001) explains the emergence of two different approaches to key competencies.

Britain's approach to the key competencies is described as a pragmatic approach that simply focused on how to strengthen the existing base of competencies that were currently in place (Kearns, 2001). In contrast, the approach that emerged from the United States, similar to the approach of Australia, encompassed a more holistic set of competencies that reflected the changing nature of knowledge and technology in our world (Kearns, 2001).

3.3.1.1 *The DeSeCo Project through the OECD*

In the late 1990s, the Organisation for Economic Cooperation and Development (OECD) recognised a growing concern amongst its contributing countries about sustaining democratic development and adequately meeting the dynamic needs of the economy. Gilomen (2003a) describes how, in response to this, the OECD began the *Definition and*

Selection of Competencies Project (DeSeCo) with the main goal of researching and developing key competencies.

Trier (2003) noted twelve OECD countries agreed to participate in the Country Contribution Process (CCP) to help research existing key competencies and for the development of these on an international basis; New Zealand was one of these. Through the CCP three different approaches emerged: The first approach was reflective of countries involved in reform at the end of the 1960s, and developed in response to needing to improve school quality; the second approach was the development of key competencies that were reflective of efforts to improve society; and finally, the third approach was symptomatic of the desire to improve national competitiveness (Trier, 2003).

Through this extensive process, Rychen (2003) articulates three key competencies developed through the DeSeCo project below:

1. **Acting autonomously:** People must be able to operate effectively and participate actively in the world as well as be able to define their identity and live life in a fulfilling manner.
2. **Using tools interactively:** Interact with both physical and socio-cultural tools and be able to identify, select and use tools effectively as well as create new ways for them to be used and tools include all those things such as language, information, and knowledge as well as technology.
3. **Joining and functioning in socially heterogeneous groups:** is concerned with competencies involving interacting with people effectively.

Rychen (2003) discussed how these key competencies were considered critical to the DeSeCo project, as they combined interrelated attitudes, values, knowledge and skills as well as developed critical and reflective thinking and could be learnt and taught in many areas of life.

3.3.2 *Australia*

As noted in the previous section, work on key competences initially began in Australia in the late 1980s (Gibb & Curtin, 2004; Kearns, 2001; Williams, 2005). Gibb and Curtin (2004) suggest that employers' emphasis on the defining of key skills was a major reason for this. As such, the Mayer Committee was commissioned in 1991 and released their report concerning generic skills in Australia in 1992 (Gibb & Curtin, 2004; Kearns, 2001) (*See appendix 2*).

Despite concerted efforts to implement the Mayer Key Competencies in Australian schools and their vocational and educational training programs (VET), a change in focus for reform meant that it was not until the OECD initiated the DeSeCo project, that Australia renewed their interest in developing these within schools.

3.3.3 *New Zealand*

The *New Zealand Curriculum Framework* was developed in 1991 and this introduced new components for focus in New Zealand education; the essential skills (Ministry of Education, 1991). The essential skills were developed in order to meet the concerns of neo-liberals wanting to ensure that future generations were effectively prepared with the skills for successful working lives (Codd, 2005; Ministry of Education, 1991). However, while these essential skills were New Zealand's effective contribution to the DeSeCo project (Trier, 2003); educators in New Zealand struggled with them and saw them, basically, as token gestures (Boyd & Watson, 2006; Carr, 2006; Hipkins, 2006).

Thus, Rutherford (2004) discusses the impetus for the Ministry of Education to commission the *Curriculum Stocktake Report* in early 2000, to review the curriculum framework amidst the growing interest in key competencies that had been stimulated through the OECD's DeSeCo project. Thus, a subsequent key change to the curriculum was the replacement of the essential skills with the *Key Competencies* in relation to the findings of the DeSeCo project (Hipkins, 2006; Rutherford, 2004).

Salganik (2003) voices the concerns in relation to the international comparative assessments of PISA, which noted growing disparities between low and high achievers in

many countries, of which New Zealand was one and highlights the need for students to be given more across discipline opportunities to learn the competencies integral to learning and life. Effective key competency learning offers the premise for narrowing this gap.

3.4 Examining New Zealand's Key Competencies

3.4.1 The New Zealand Curriculum Key Competencies: An overview

The New Zealand Curriculum identifies five key competencies:

- *thinking*
- *using language, symbols, and texts*
- *managing self*
- *relating to others*
- *participating and contributing*

People use these competencies to live, learn, work, and contribute as active members of their communities. More complex than skills, the competencies draw also on knowledge, attitudes, and values in ways that lead to action. They are not separate or stand-alone.

They are the key to learning in every learning area. (Ministry of Education, 2007: 12).

The Ministry of Education (2005) identified the need for competency development to enable educators to meet three key shifts in thinking and practice; that is, the development of a shared understanding between education and employment sectors; development of higher levels of competence; and enhanced teaching and learning of competencies.

The *Key Competencies*, while stemming from the work of DeSeCo, have also been developed in consultation with New Zealand educators and thus, differ slightly. The important difference is the addition of thinking in the New Zealand curriculum, as the DeSeCo project highlighted this as a necessary part of all competencies and therefore did not separate it (Carr, 2006). It is important to note that while New Zealand curriculum has separated thinking into its own competence, it agrees with the notion of its threaded nature throughout the other competencies (Carr, 2006; Hipkins, 2006). The New Zealand

curriculum competencies are also different from the key competencies in the early childhood framework, Te Whariki, and those developed for New Zealand tertiary education. The connections between these and the DeSeCo competencies are articulated in the table below:

Figure 2.1 Comparisons of Key Competencies in New Zealand and with DeSeCo

New Zealand Curriculum (School)	Te Whariki	Tertiary	DeSeCo
Managing Self	Wellbeing	Acting autonomously	Acting Autonomously
Relating to Others/ Participating & Contributing	Contribution	Operating in Social groups	Functioning in socially heterogeneous groups
Participating & Contributing	Belonging		
Using language, symbols and texts	Communication	Using tools interactively	Using tools interactively
Thinking	Exploration	Thinking	Thinking as a cross- cutting competency

(adapted from Hipkins, 2006 and Ministry of Education, 2005)

3.4.2 Thinking

Thinking is about using creative, critical, and metacognitive processes to make sense of and question information, experiences, and ideas. These processes can be applied to purposes such as developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency (Ministry of Education, 2007:12).

This key competency is threaded through all the other key competencies as it focuses on the development of reflective, critical, creative and metacognitive thinking (Hipkins, 2006). Hipkins (2006) also suggests that thinking includes key skills such as analysis, synthesis and evaluation across a variety of disciplines and contexts.

3.4.3 Using Language, Symbols & Texts

Using language, symbols, and texts is about working with and making meaning of the codes in which knowledge is expressed. Languages and symbols are systems for representing and communicating information, experiences, and ideas. People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual;

informative and imaginative; informal and formal; mathematical, scientific, and technological. (Ministry of Education, 2007:12)

Hipkins (2006) identifies this competence as potentially the most problematic for implementation. There is a potential for this competence to be simply thought of as literacy and ICT development (Boyd & Watson, 2006; Hipkins, 2006). Hipkins (2006) argues it is about understanding that perceptions of the world are shaped and constructed through language, both visual and verbal. Skills associated with this competence include conveying and receiving information; recognising patterns and relationships; processing information; adapting information and participating in a range of settings using information, symbols and texts (Hipkins, 2006). Boyd and Watson (2006) found that explicit teaching of more complex practices of using language, symbols and texts was rare.

3.4.4 Managing Self

This competency is associated with self-motivation, a "can-do" attitude, and with students seeing themselves as capable learners. It is integral to self-assessment. Students who manage themselves are enterprising, resourceful, reliable, and resilient. They establish personal goals, make plans, manage projects, and set high standards. They have strategies for meeting challenges. They know when to lead, when to follow, and when and how to act independently. (Ministry of Education, 2007:12)

This competence extends to managing self through developing goal-setting, monitoring and reflective practices as well as managing self physically. It is also through metacognitive practices that allow students to identify who they are, their strengths and weaknesses, and using this to benefit and enhance learning (Hipkins, 2006). Hipkins (2006) notes the strong link between managing self and relating to others, suggesting "Students cannot learn self-management in isolation from their interactions with others," (p.33).

3.4.5 Relating to Others

Relating to others is about interacting effectively with a diverse range of people in a variety of contexts. This competency includes the ability to listen actively, recognise different points of view, negotiate, and share ideas. (Ministry of Education, 2007:12)

Hipkins (2006) posits that this competency is not merely concerned with social skills, but has a far more extensive range of competencies within it relating to theories of

sociocultural and situated learning. The differing viewpoints and understandings that students bring to a group impact upon the new learning that is created, and such interaction is crucial to developing rich understanding (Hipkins, 2006). As Boyd and Watson (2006) discuss in their findings through the NSA key competency study, teachers currently rarely use explicit teaching of the strategies needed to communicate and collaborate with others.

3.4.6 *Participating & Contributing*

This competency is about being actively involved in communities. Communities include family, whānau, and school and those based, for example, on a common interest or culture. They may be drawn together for purposes such as learning, work, celebration, or recreation. They may be local, national, or global. This competency includes a capacity to contribute appropriately as a group member, to make connections with others, and to create opportunities for others in the group. (Ministry of Education, 2007:13)

Important in this competency is engaging students so that they are encouraged to develop an intrinsic motivation towards lifelong learning, enabling them to be active participants and contributors to their world (Hipkins, 2006). Hipkins (2006) points out that all of the other competencies require opportunities to be actively developed and practiced by students, and the authentic learning experiences that are necessary to develop this competence are the ideal platform for such opportunities.

3.5 *Implementing the Key Competencies*

Hipkins (2006) has considered implications for implementing the *Key Competencies*; suggesting that it is important to avoid making *Key Competencies* simply an act of tokenism. Hipkins (2006) states the *Key Competencies* need to be developed:

- Holistically
- Through rich and integrated description
- Explicit planning, teaching and learning of the whole competence
- In dynamic connection with curriculum content
- Purposeful assessment that helps aid each of the above criteria.

Kearns (2001) describes competencies as requiring active learning strategies that enable learners to “...develop the attributes, habits and skills of motivated lifelong learners,” (Kearns, 2001:76).

3.5.1 Planning for key competency learning

Carr (2006), Hipkins (2007) and Keating and Oates (2003) discuss the importance of sufficiently consulting, developing and planning for learning opportunities of the *Key Competencies* to ensure quality learning programmes that enable transfer of the competencies across contexts.

The NSA was involved in a study of how to develop, implement and assess the key competencies. The schools involved in this study all advocated the use of curriculum integration; selecting only one or two key competencies to focus on during units of integrated curriculum or inquiry as a means to help build understanding both for students and teachers, as well as to build clarity and depth in regards to the competence.

Strategies to include in planning for key competency learning are noted by Hipkins (2006), who suggests that many of our current practices such as inquiry learning and use of different thinking tools are platforms for key competency development. Once again, it is prudent to make the connection between the recognition of the use of these strategies to develop the key competencies as well as to develop and enhance curriculum integration.

3.5.2 Assessing the Key Competencies

Perhaps the most widely argued and discussed aspect of the *Key Competencies* is assessment. At present, there is no requirement to assess the *Key Competencies* (Ministry of Education, 2007); however, the question must be asked: What is the point of teaching something if its development is not going to be monitored?

Hipkins (2007) suggests we need to carefully consider the purposes and methods of assessment for the *Key Competencies* to ensure integrity: is it for accountability and reporting; directing teaching and learning; or providing goals to develop lifelong

learning (Hipkins, 2007)? Williams (2005) discusses how the very nature of competencies suggests that to assess them often involves elements of subjectivity. Not only this but assessment of competence requires a judgment often based on a single performance of the day and judgments on what fits an expected 'norm' (Williams, 2005). Thus, Gonczi (2003) articulates the need for assessment to be an aggregation of observed performances or behaviours as opposed to a one-off summative assessment measure.

Trier (2003), while considering assessment methods in the *DeSeCo* project, discovered that models of assessment were rare; in fact, Finland was the only country with any framework in place. Most countries involved in the study reported rather ambiguous guidelines on assessment in relation to competencies, with some countries discussing little political pressure to assess while some countries vehemently opposing such measures, in spite of their high performance in education (*see for example, Sweden*).

Key competency assessment needs to be situated in meaningful and relevant contexts and lead to the development of further learning, rather than be a means of summative comparison only (Hipkins, 2007).

"...competencies can only be assessed when the assessment situation allows for adaptation to a new context to be demonstrated," (Hipkins, 2006:8).

Hipkins (2007) identified several potential assessment methods for the *Key Competencies*: learning logs or journals, learning stories, portfolios and the use of rich tasks based on the *Queensland New Basics* programme. Such recommendations are appropriate given the focus of study for research in this thesis.

3.6 Potential Barriers for Key Competencies

The potential benefits of *Key Competencies* have been embedded in the review of these. However, there are several potential barriers. Hattam and Smyth (2001) focused concern over fears that the use of competencies would undermine other issues in education and training in Australia, and would dominate the focus of governmental policy. Further to this, Hipkins (2007) uses the example of the *Queensland New Basics* project to demonstrate

that key competency initiatives need to be supported by government through policy and resources, and within the schools, in order to sustain their effective implementation or else face the failure that the *New Basics* project was subjected to once state support and funding was removed.

Hipkins (2007) identified three other important issues “we already do that”; “we haven’t got time to do that”; and “if it’s not assessed, we won’t teach it”. In addition to this, Hipkins (2006) articulates the obvious need for teachers to be well supported, well-resourced and given ample time for planning and development.

4. Queensland *New Basics*

4.1 What is the *Queensland New Basics* Project?

The *Queensland New Basics* project trial was an initiative trialled by the Queensland State Education in Australia. The initiative was in response to a review of education for Queensland and their planned curriculum reforms heading into the 21st century in *Queensland State Education 2010* (Luke, Matters, Herschell, Grace, Barrett, & Land, 2000).

4.1.1 Project Overview

The *Queensland New Basics* project was based on three connecting concepts: *Productive Pedagogies*, the *New Basics* and *Rich Tasks* (Luke et al., 2000; Queensland Government, 2004; Queensland Government, 2009) (refer to appendix 1). The *Productive Pedagogies* component was concerned with the active planning and development of a wide range of pedagogical tools and strategies within different units of learning. The *New Basics* component consisted of four key *New Basics*, similar to *Key Competencies*, referred to here as referents and formed the basis for learning in different units, encouraging an integrative approach to planning, teaching and learning. The *New Basics* referents were: Life Pathways and Social Futures, Multiliteracies and Communications Media; Active Citizenship; and Environments and Technologies. The final component, *Rich Tasks*, was

the culminating assessment activity that allowed children to demonstrate all of their learning in that unit (Arnold & Ryan, 2003; Luke et al., 2000; Queensland Government, 2004; 2009).

The project was set up so that there were different sets of *Rich Tasks* based on different year groups: Years 1-3, Years 4-6, and Years 7-9 (Harrison, 2009; Luke et al., 2000; Queensland Government, 2009). The curriculum was entirely prescribed and *Rich Tasks* were set and designed by the Queensland State Education prior to the project trial beginning. This included the *New Basics* referents, unit plans, unit overviews for each set and assessment rubrics. Some *Rich Tasks* were worked towards over a period of three years; that is, through a series of focused and integrative teaching and learning units beginning in Year 1, the final *Rich Task* would be completed in Year 3 (Luke et al., 2000). Thirty-eight schools across Queensland participated in the trial for four years, plus several more “like” schools that were following, but not directly involved in the trial (Queensland Government, 2009).

4.1.2 Purpose of the project

Queensland State Education 2010 responded to the growing calls across Queensland that their current education system was not engaging students and not leading to the desired educational outcomes (Luke et al., 2000). Luke et al. (2000) described the *Queensland State Education 2010* review: it set out directives that focused on increasing student achievement and student engagement. Thus, the purpose of the *Queensland New Basics* project trial was to attempt to meet these imperatives by facilitating deeper learning, higher order thinking, curriculum compacting, greater student engagement and higher achievement (Arnold & Ryan, 2003; Luke et al., 2000; Queensland Government, 2009).

The *New Basics* referents were established in reflection of the growing world trend in establishing key competencies based on effective participation in lifelong learning and the aim of these was to provide the basis for integrated learning that looked to develop important lifelong and transferable skills, attitudes, knowledge and values (Adkins, Grant, Summerville, Barnett & Buys, 2003).

4.2 Theoretical Underpinnings of the Queensland New Basics

The *New Basics* curriculum design drew on the work of Dewey, Freire and Vygotsky, highlighting the constructivist nature of the design and the ideas of interdisciplinary teaching (Luke et al., 2000; Queensland Government, 2009). *Rich Tasks* were characterised by their interdisciplinary, problem-based nature that saw learning focus on authentic and real-life contexts integrating those disciplines which naturally fit within the focus for learning and the traditional boundaries between separate subjects were removed, though connections made clear (Arnold & Ryan, 2003; Queensland Government, 2009).

Essentially, the *Queensland New Basics* were an adapted design of curriculum integration as the *New Basics* referents were based on five different key areas considered to be important to the development of learners as whole, much the same as New Zealand's *Key Competencies* and these formed the basis for learning. The curriculum was still prescribed and therefore not matching the integrative approach to integration through the collaboration in decision-making for what the focus for learning is, but it was a first step towards curriculum integration.

4.3 Queensland New Basics Findings

It is important to note that the trial schools involved in this project experienced mixed-success and had to contend with reporting back on both the *Queensland New Basics* trial and the existing curriculum objectives for Queensland State Education (Harrison, 2009; Queensland Government, 2004). Upon the end of the trial, Queensland State Education implemented a brand new standardized curriculum consisting of Essential Learning standards, similar to New Zealand's developing *National Standards*, and new state-wide testing and reporting systems that all schools were required to adhere to (Harrison, 2009). The funding for the *New Basics* trial was removed and, while schools were given the option to continue in the programme, they were also expected to meet the new curriculum demands and also improve on the new nation-wide standardised testing being implemented also (Harrison, 2009; Queensland Government, 2009). Due to this,

many schools were forced to opt out of the programme because of the burdens of a dual curriculum and the few who have continued have done so because of extensive staff support, development and passion for the curriculum design and its impact on student achievement (Principal, Chevallum State School, Queensland, 2009).

4.4 Relevance to New Zealand

Hipkins (2007), in reference to discussion on how to implement and possibly assess New Zealand's *Key Competencies*, highlighted the Queensland *New Basics* as a means for modelling the teaching and learning of *Key Competencies* in New Zealand's revised curriculum. This reference was timely as New Zealand's own curriculum development also supports the notions of curriculum integration (Ministry of Education, 2007).

When comparing New Zealand's *Key Competencies* to the Queensland *New Basics* referents, there are some clear similarities, as demonstrated in the figure below:

Figure 2.2 Comparisons of New Zealand's *Key Competencies* with *New Basics* referents

Key Competencies	New Basics
Thinking	
Using language, symbols & texts	Multiliteracies & Communications Media/ Environments & Technologies
Managing Self	Life Pathways & Social Futures
Relating to Others	Active Citizenship/ Life Pathways & Social Futures
Participating & Contributing	Active Citizenship

The only key competency not clearly represented through the Queensland *New Basics* is Thinking, which perhaps for the *New Basics* is reflective of the decision made by the OECD *DeSeCo* project that described thinking as an integral part of all competencies. Despite this, when considering these links and Dowden's (2007a) comments regarding the value of understanding the history and development of curriculum integration, the Queensland *New Basics* project offers a model of integration based on similar curriculum developments to those in New Zealand that we can learn from and, potentially, develop to meet our own needs.

Such has been the focus for development for the EHSAS *Graduate* cluster in New Zealand which began in late 2006. This cluster looked to the *Queensland Rich Task* model to help them effectively create a model of curriculum integration to enhance achievement across all curricula areas.

5. Managing the Change Process

5.1 Introduction

Underestimating the complexity of change is a serious error. The notion of a planned change process that will ensure that educators move through mandated change in a linear order simply does not work. (Drake, 1998:192)

Without a doubt, the process of implementing change in schools is substantial. Therefore, it is integral that those involved in change, understand the process of change. As Drake (1998) and Fullan (1990) suggest, typically the nature of the 'organisation' is set up as such so that it reinforces the status quo, as opposed to encouraging change. Added to this, often change is misdirected and the change occurring is superficial (Fullan, 1990). For change to occur successfully, it must be systemically planned and led. The following sections will look first at the culture of change; specifically how change occurs and the effects of it, and how to enable successful change.

5.2 The Culture of Change

Wolger (1998) discusses the need to establish change in schools as the norm but what does change look like in schools? Fullan (1990) insists that change needs to be supported from the top down, highlighting that too often, cycles of change are disjointed. Thus, support needs to come from government, school administration and management, change leaders and the staff (Hargreaves & Fink, 2006).

In respect to creating change, Drake (1998) notes several key findings from her research on curriculum design change. Specifically, Drake (1998) has identified that it often takes a year for schools to gain clarity on what they are doing, often producing something very different from what was first envisioned and that often change seems to occur unexpectedly with teachers often complaining for a period before they become more confident with the changes being implemented and how to apply this to their own teaching and learning. Fullan (1990) and Wolger (1998) also note that the ability for teachers and schools to cope with change is variable and reflects individuals' capability to do so in a wider context and their own understandings and viewpoints.

Change is variable. While so much can be planned for, the cause and effect nature of change often sees one variable lead to the necessary change of another variable (Drake, 1998; Fullan, 1990). Successful and sustainable change is possible though and this will be discussed in the following section.

5.3 Enabling Successful Change

Facilitating successful change requires effective leadership (Fullan, 1990; Hargreaves & Fink, 2006). This must first come from school management. Bartlett (2005) describes the process of Kuranui School and suggests that setting up for change required key understandings and support of several factors: teacher participation in decision making; regular communication; and the creation of collaborative team to support and motivate each other. Hargreaves and Fink (2006) outline how school management should provide the foundations for commitment to change by providing time, resources, professional development, changes to school organisation such as timetabling as well as a culture of collaboration and support amongst staff. This applies even when teacher performance may dip or mistakes are made, so that the focus on is regular reflection and discussion to ensure there is learning from these experiences (Drake, 1998).

Change should then be led by either an individual or group, depending on the size of the school, which shares the vision for change and is committed and curious in approaching

change (Drake, 1998). Hargreaves and Fink (2006) suggest that leaders need to develop people and be people-centred. Drake (1998) describes four stages leaders will experience through establishing change to integrate the curriculum:

- **Form:** *These are the initial stages of the group getting to know one another.*
- **Storm:** *Inevitable conflict*
- **Norm:** *The group comes together to develop group norms*
- **Perform:** *The norms are established and the group can now get down to the task. (Drake, 1998:192)*

As part of this, it is critical for the leader of curriculum integration change to be respected and respectful of staff; motivated; prepared for conflict; have a strong understanding of constructivist philosophy and is committed to making school better for the students (Drake, 1998).

Change also needs to be sustainable (Hargreaves & Fink, 2006). Drake (1998) outlines that a factor for successful change is involvement in ongoing data collection around the initiative, such as that created through involvement in the *EHSAS Graduate Cluster* and the research from this thesis itself. Sustainable change must be planned for, regularly reviewed and reflected upon and continue to be supported through effective leadership, ensuring the cycle of change is fluid and connected (Fullan, 1990).

6. Chapter Summary

Curriculum integration has been experimented with for over one hundred years stemming from Dewey's work in the United States during the Progressive Movement. Curriculum integration first found its roots in New Zealand in the 1940s, but momentum was slow and it has only been since the Freyberg Integrated Studies Project in 1989 that renewed interest has occurred. There has been extensive debate over the definition of curriculum integration, models of curriculum integration and the purpose and relevance of curriculum integration. The integrative approach: learning transcends subject boundaries and draws on concepts through development of learning to solve an issue, is held as the truest form of curriculum integration. However, it is typically the

multidisciplinary approach that is more commonly used both in New Zealand and across the world, though Dowden (2007a) recommends the integrative approach as more suitable for the specific learning needs of New Zealand children.

Key competency development in the New Zealand revised curriculum is reflective of growing impetus across the world since the *DeSeCo* project, which recognised the importance of developing generic competencies across the disciplines and through a variety of contexts to develop core life-long learning. Many educators have already noted the use of curriculum integration as a means for teaching key competencies and the potential key competencies has for student achievement, particularly in narrowing the polarising gaps noted in many countries by Salganik (2003).

The *Queensland New Basics* project used an interdisciplinary approach to curriculum integration using a similarly developed curriculum to New Zealand's revised curriculum; where the *New Basics* referents are comparable to the *Key Competencies*. This provides a stepping stone in curriculum design for effective curriculum integration based on key competencies in New Zealand. The process of change can be difficult and needs to be well-managed. Teacher support and time for development are critical to implementing change successfully.

Several gaps in understanding still remain however. Dowden (2007a) supports the use of the integrative approach in New Zealand's schools but this is mainly theoretically based, and not reflective of extensive studies of its use in New Zealand. There have been few case studies using integrative approaches to curriculum integration carried out in New Zealand, and to date, even fewer that are inclusive of New Zealand's revised curriculum. The revised New Zealand curriculum, Hipkins (2007) and Boyd and Watson (2006) suggest curriculum integration as effective design for implementing the key competencies but there is little research evidence to support this as yet. Finally, the *Queensland New Basics* was a project that had potential. The *Rich Tasks* reflected a workable model of curriculum integration design that could be developed and effectively implemented in New Zealand schools, but further evidence of its benefits is still needed. As such, this study aims to bridge these gaps in understanding.

Chapter 3

RESEARCH METHODOLOGY

1. Introduction

The purpose of this chapter is to outline the methodology used for the study in this thesis. It outlines the specific details of the study and makes links to the methodology practice evidenced in the literature. The chapter begins by describing the research question, objectives, the boundary of investigation and the research design. Case study research design is then considered more closely in respect to the methodology used in this research study, looking at the methods of data gathering and analysis, as well as theoretical considerations, the role of the researcher, the research process and the ethical considerations.

2. Research Question

How can a model of curriculum integration be used to form a basis for the effective development of, and implementation of, the New Zealand curriculum's *Key Competencies* to enhance student achievement in all learning?

2.1 Research Sub-questions

1. What is curriculum integration?
2. What are the New Zealand *Key Competencies*?
3. How do the *Queensland New Basics & Rich Task* models enable a basis for curriculum integration that includes the *Key Competencies* in New Zealand?
4. How can curriculum integration be used to develop the *Key Competencies*?
5. How can curriculum integration and the *Key Competencies* be effectively implemented to lead to enhanced student achievement?

3. The Boundary of Investigation

The boundary of investigation sets the scene for the research study. The research was set in a regular mixed-ability semi-rural small school consisting of 4 classrooms: Year 0-2, Year 3-4, Year 5-6, and Year 7-8 classrooms respectively, with 60 students in total. The study focused on a single unit using the curriculum integration model the school had developed – *Rich Learning*. The context for the *Rich Learning* unit was: A World of Mystery: How Can We Solve Problems? The initial *Key Competencies* focused on were: Thinking and Using language, symbols & texts. The initial *Deeper Understandings* (*the why are we learning this*) and *Deeper Knowledge* (*the what and how we are learning*) are described below.

Figure 3.1 Deeper Understandings and Deeper Knowledge focus for unit of research

<i>Deeper Understandings</i>	<i>Deeper Knowledge</i>
<ul style="list-style-type: none"> • Throughout our lives we will face problems that we need to solve. • Our world is full of mysteries that we don't yet have the answers for but it is human nature to search for these answers. • Information is problematic because it comes from authors who may not have a neutral viewpoint. • Changing technology is changing the nature in which we create and have access to information 	<ul style="list-style-type: none"> • Information is shaped for different purposes and a variety of audiences: different cultures, communities and organisations. • Information is communicated and presented in many different ways because of changing technology. • Finding relationships, interpreting and evaluating statistics and data. • Making meaning of information from a variety of forms of language. • Create meaning from information using a variety of forms of language. • Critical Thinking. • Problem Solving. • Social Inquiry

It is important to note at this point that reflective discussion during the study initiated further development to the model of curriculum integration and in a set of rigorously created deeper understandings. This changed the *Deeper Understanding* to:

Patterns and relationships help us make sense of the world around us.

This provided greater integrity and clarity to the model without impacting any change to the *Deeper Knowledge* being focused on. The unit of learning lasted for ten weeks and my role was as both teacher of the Year 5 and 6 class and as the researcher in the study.

3.1 Research Design Type

The research design type was a descriptive single case study. The case was bounded by its setting within the four classrooms, fitting nicely within the single case study methodology. The key objectives of the study were to develop and use a model of curriculum integration, based on the Queensland *New Basics Rich Tasks* model and the New Zealand *Key Competencies*, to enhance student achievement. Through this, an aim was to develop effective planning, teaching and assessment methods for the *Key Competencies*. As such, the research was looking to evaluate the journey the school undertook in achieving these objectives.

However, it is important to note that while case study is the methodology being used here, that the nature of the researcher being involved in the teaching is not consistent with case study but better suited to action research. The nature and purpose of the study suited the case study methodology though, and the time constraints imposed by both the school's availability, my own time as both researcher and full-time teacher and the requirements of my master's thesis meant that a case study was a more appropriate design also.

4. Case Study Research Design

4.1 Introduction

Case Study research designs are typically useful in answering the "how" and "why" questions that arise in qualitative research (Berg, 2004; Kennedy & Luzar, 1999; Poskitt, 2006). Yin (1993) defines case study as investigating...

"...a contemporary phenomenon within its real-life context, addresses a situation in which the boundaries between phenomenon and context are not clearly evident, and uses multiple sources of evidence," (p.59).

Perhaps the most defining characteristic of the case study is its bounded nature; that is, case studies occur within fixed parameters that define the case. These parameters, classically, are determined by the number of people involved in the case, the research

setting, the data collection methods, the research time frame and the focus for the case (Merriam, 1998). In fact, Berg (2004) discusses how the wide scope offered within the case study design means that any given case could range from large in-field studies to single interviews; from individuals to groups to whole communities; using data collection methods ranging from interviews to documents to observations to historical accounts. Many researchers concur, acknowledging that case study design involves various data collection methods and the use of multiple sources of evidence (Bassey, 1999; Bogdan & Biklen, 2003; Kennedy & Luzar, 1999; Merriam, 1999).

However, the timeframe for the case study is normally significantly shorter than other qualitative designs such as action research or ethnography (Yin, 1993). Also in contrast to the action research design is the nature of the role of the researcher in case study methods. Action research calls for the researcher to also be a participant in the research, whereas case study designs see the researcher as an observer.

This research project sought to describe a single case: the journey of one school as they worked to enhance student achievement through the implementation of a model of curriculum integration based on the *Key Competencies (Deeper Understandings)*. The case was bounded by a specific timeframe of the ten weeks of the learning unit and by the particular focus of one phenomenon in the case and the setting: one school through the course of one rich learning unit. Merriam (1998) suggests that case studies are unique from other qualitative research designs in *"that they are intensive descriptions and analyses of a single unit or bounded system,"* (p.19). The use of multiple data collection methods in case study design allows for rich and detailed descriptions as well as enabling strong generalizations due to the embedded nature of the case, and this fitted nicely with the aim to describe the school's journey and, hopefully, act as a point of reference for other school's developments (Bassey, 1999; Berg, 2004). However, as will be discussed further, my role as a teacher in the school and a participant in the research reflects more an action research design, which aims to bridge theory and practice (Kyle & Hovda, 1987; McNiff & Whitehead, 2002; Tripp, 1990).

4.2 Case Study Designs

The research undertaken through this project was based on qualitative research principles through the case study design. Merriam (1998) suggests that case studies as qualitative research are typified not only by their bounded nature but are also, characteristically: particularistic, as it focuses on a single phenomenon; descriptive, through the in-depth, detailed and rich description it provides of the phenomenon; and heuristic, as they provide insights into relationships and new meaning around the phenomenon. Still, within the case study research method, there are many different types of research design. Some suggest that ethnography and action research even fit within case study designs, however, Yin (1993; 2003) recognises three types of case study design: exploratory; explanatory and descriptive. All these design types can be used within single or multiple case studies, however, as this is a single case study, they will only be considered from that perspective.

Exploratory case studies are typically used as a means of finding questions and hypotheses for a further or subsequent study, often determining the feasibility of the subsequent study. Explanatory designs focuses on finding out about cause and effect relationships or how things have happened (Yin, 2003). This case study is a descriptive case study, which will now be looked at more in-depth.

4.2.1 *Descriptive Case Studies*

Yin (2003) suggests that descriptive case studies are frequently overlooked in favour of explanatory case studies. Often, it would appear, this is due to the theoretical basis of explanatory case studies, for example, in this case study the aim is to implement a model, based on theory, to enhance student achievement. However, descriptive case studies provide more opportunity to extensively describe the journey of implementing this model of curriculum integration. Descriptive case studies allow for even richer and more detailed description and account of an object, suggesting that theory is just as important in the descriptive case study (Berg, 2004; Yin, 2003). In contrast to explanatory case studies where theory stems from the theory behind the cause and effect relationships being researched, the descriptive case theory is based on the parameters or criteria of the

case that define when the description starts from and ends at; what the description should include and who should be described (Yin, 2003). Considering this case study it is important to note that as the researcher, I have chosen one set timeframe within an on-going journey of development for the school being studied. The school originally began its exploration of the *Queensland Rich Task* model two years before this research began, making it an extensive process, nevertheless the bounded nature of the parameters set in this case, easily provide the defining points and theory for the description in this case study.

4.3 Data Collection in Case Study Research

One of the valuable aspects of case study research lies in the ability to use multiple and various methods of data collection. The most commonly used are interviewing, observation, archival data, and historical accounts or records, as well as private and personal documents (Bassey, 1999; Berg, 2004; Gillham, 2000; Merriam, 1998; Stake, 1995; Yin, 1993; 2003). Gillham (2000) suggests that all data gathered is of use and suggests the use of maintaining a research log that includes this evidence and the researcher's own personal notes as they carry out the research. This descriptive case study has primarily used interviewing, observation, and collection of documents. Each of these data collection methods will now be examined.

4.3.1 Interviewing in Case Study Research

Interviews can typically be thought of as person-to-person interviews, although, Gillham (2000) suggests that interviews can be considered part of the broader category of surveys; Merriam (1998) notes that interviews can be thought of as conversations. Obviously the key here is that the conversation has a purpose and is guided by pre-determined interview questions that lead to open, detailed and descriptive discussion. Interviewing is necessary when researcher's wish to ascertain more than mere observed behaviours, when researcher's want to understand participant's feelings or thoughts about what is happening (Bassey, 1999; Berg, 2004; Gillham, 2000; Merriam, 1998; Stake, 1995).

Interviews can be conducted with single individuals, with groups or whole collectives (Berg, 2004; Gillham, 2000; Merriam, 1998; Stake, 1995). For this case study, the researcher carried out pre and post interviews with each individual classroom teacher and post interviews with student focus groups from each class. The purpose of these was to ascertain teacher's understandings prior to the unit and how they changed as well as teacher's and students' perceptions on how it impacted student achievement. As a teacher in the classroom, I only interviewed three of the four classrooms, using the school administrator to interview my own class as a means of overcoming potential ethical conflicts. In order to ensure the validity and reliability of the interviewing, an interview schedule was formed and I fully discussed the purpose of it with the school's administrator.

Interviews can be highly structured, semi-structured or informal, with the most structured form usually being a survey and the most informal resembling off-hand conversations (Berg, 2004; Merriam, 1998). In this case study, I used a semi-structured interview format with four open questions and guiding sub-questions to prompt further discussion (*see appendix 3*). This format was used as I wished to keep focused on my objectives while still encouraging detailed and rich discussion, as well as ensuring validity and reliability in data collection due to the involvement of the school administrator to conduct one interview.

4.3.2 Observation

Observation is one of the primary sources of data collection in the case study design (Gillham, 2000; Merriam, 1998; Stake, 1995). Observations take place in the natural setting of the research and observe the phenomenon as it interacts with the participants (Merriam, 1998; Stake, 1995). While observation is a natural part of human nature, Merriam (1998) articulates that observation is only a research tool when it is focused on the research purpose; is planned; is recorded systematically; and is questioned in order to ensure its validity and reliability.

Gillham (2000) notes two types of observation: participant, where the researcher is involved in the setting and it is mainly descriptive; and detached or structured, essentially where the researcher watches from the 'outside' of the setting in a controlled

way. As the researcher and a teacher in the school, my observations were a mix. The observations were planned, timed and carried out using a specific tool as in the structured method, but I was also involved in the setting naturally as I conversed with the students and teachers, who all knew me.

Observations provide the opportunity for greater understanding of the case (Stake, 1995), allowing the outside researcher to often see things that the participants would not see themselves or that have become commonplace, inherent parts of their behaviours. Observations also offer opportunities to triangulate other data gained, by observing it in action (Merriam, 1998). Recording these events ensures there is a good record of them that can lead to greater description, allowing a story to be told and thus, more extensive analysis and effective reporting (Stake, 1995). As this was a descriptive case study, this use of recording the 'story' through observation was an integral component of the case study.

Merriam (1998) discusses how criticisms of observation reflect on the subjective nature of observation. Despite this, by ensuring the parameters of the case are firmly set and observation is planned for with specific focuses on categories or key events, careful and systematic observation can take place (Merriam, 1998; Stake, 1995).

The observations undertaken through this research study consisted of observations of each of the four classrooms, for periods of twenty-thirty minutes at two points throughout the learning in the unit. As I am a teacher in one of these classrooms, an outside observer was used for my own classroom. This experienced outside researcher had been involved in the wider cluster and was familiar with the intent and direction of curriculum integration and rich tasks. In order to provide continuity, validity and reliability, I used two observational matrices; one for students, one for teachers. The observational matrices were originally formed in conjunction with a representative group of teachers from each of the five schools that had been involved in the *EHSAS Graduate Cluster*. This group had developed these as a generic tool to be used across schools to aid in assessment in school and provide data to the Ministry of Education in accordance with the cluster's accountability for their *EHSAS* project. This provided a starting point and I further developed these matrices for the school for two reasons: as a means of student

assessment tracking and teacher self-assessment, which the teaching staff had requested I do as part of my lead teacher role in the school; and as an observational tool for this research study. The observation tool was thus re-developed to reflect the school's own focus, language and terms for the curriculum integration model (*see appendix 4*).

4.3.3 Document Analysis

Documents usually fall into three broad categories: public records, personal documents and physical material (Merriam, 1998). In this case study, the main documents being analysed were teacher planning, teacher's assessment records of students and teacher's evaluations and reflections of learning for the rich learning unit. These can be considered personal documents as they are created by the teacher themselves and, essentially, only used by the teachers, however many of the evaluations and reflections were recorded during discussions at staff meeting and while meeting minutes are not public in the sense of being open to the community, they are public in the sense of the school teaching community. The primary reason for analysing these was to provide triangulation of the other data collected and also to point to emerging themes or issues useful to look for in observations and the post-interviews of the teachers.

4.4 Data Analysis and Reporting in Case Study

Data analysis is always a complex task (Bassey, 1999; Gillham, 2000; Stake, 1995). Bogdan and Biklen (1998) describe data analysis as the process of searching and arranging collected data. There are two aspects to this: the analysis of data while in the field; and the analysis of data once data collection has ended (Bogdan & Biklen, 1998; Merriam, 1998). This highlights the simultaneous nature of data collection and analysis (Merriam, 1998; Stake, 1995).

Four key techniques are used in data analysis: pattern-matching, explanation building, time-series analysis, and the use of program logic models (Kennedy & Luzar, 1999). Through this case study, pattern matching has been the primary technique used through the content analysis strategy. Pattern-matching looks at identifying patterns and finding relationships between theory and what is observed (Stake, 1995; Yin, 1993).

Merriam (1998) identifies several different data analysis strategies: ethnographic analysis, narrative analysis, phenomenological analysis, the constant comparative method, content analysis and analytic induction. Although Merriam (1998) notes the content analysis strategy as less commonly used, it has been essential for analysing the data collected through this descriptive case study. Content analysis allows data to be condense, coded and easily compared at the end of data collection and is highly recommended for use in qualitative research studies by Berg (2004) and Bogdan & Biklen (1998; 2003). While some of the data analysis in this study took place after initial teacher interviews and observations to identify emerging themes, most data analysis was conducted at the end of data collection, once post teacher interviews and student focus group interviews were carried out.

Once all data are analysed, the next step is reporting the findings. Gillham (2000) describes five key components of the report: chronology, describing the order in which things happened; logical coherence, ensuring it is written so that it makes sense and links are easily made; the aim of the research; the research questions and how these were developed; and the theorizing, giving the meaning or the understanding of the research findings.

4.5 The Role of the Researcher

The role of the researcher is also unique in the case study research design. Typically, the case study method sees the role of the researcher on a continuum of observation (Berg, 2004; Bogdan & Biklen, 2003; Merriam, 1998). This is in stark contrast to methods such as action research and teacher inquiry where the researcher is often also a participant in the study (Berg, 2004). The case study researcher role ranges from participant observer, where the researcher interacts with the group being observed, to complete observer, where the researcher remains separate or "on the outside" of the observation group (Berg, 2004; Bogdan & Biklen, 2003; Merriam, 1998). As a teacher in the school and therefore a full participant in the research, my role as a researcher has been an exception to the typical case study method. The co-researcher/teacher role is characteristically

reflective of action research methodology (Kyle & Hovda, 1987; McNiff & Whitehead, 2002; Tripp, 1990); however, several aspects determining the nature of the study made descriptive case study research design the most appropriate for this study, despite the discrepancy in the typical researcher role. These aspects, as discussed in section 4.2, were the bounded nature of the study: set within a single setting and a single case focused on one phenomenon; the research focus on the journey towards achieving an effective curriculum integration model that enhanced achievement – lending itself to the potential for rich description of this journey; and set timeframe of the case.

4.6 Planning for the Case Study Research Process

Planning for the case study research process was an integral component of this study. It provided the necessary outline of the journey or description for this case study (Berg, 2004; Yin, 2009) and allowed for detailed, focused and careful development of the research questions, and the data collection and analysis methods. Yin (1993) identifies that case study research design should have thorough preparation including the reviewing of the literature of both the content and methodology, developing hypotheses, developing schemes for understanding the context, and, defining the key design components.

Bassey (1999), Creswell (1994) and Yin (1993) highlight an overview for the stages within the case study process. These are:

- 1) identifying the research problem and hypothesis
- 2) asking questions and drawing up ethical guidelines
- 3) collecting and storing data
- 4) generating and testing statements
- 5) interpreting the analytical statements
- 6) deciding on the outcome and writing the case report
- 7) finishing and publishing

These provided a useful and crucial framework for planning this study (*see appendix 5*).

5. Theoretical Considerations

It is essential in any research study to ensure that the study is actually of worth, not only to the researcher but to the participants and to the wider world. The potential for this study is great; the descriptive journey of how one school works towards enhanced student achievement through the use of a model of curriculum integration based on New Zealand's revised curriculum has prospective benefits for all New Zealand schools as they face, at the very least, the journey to implement a revised curriculum. Nonetheless, such benefits need to be based on substantiated findings and thus, there are certain theoretical research considerations that need to be accounted for. These will be examined now.

5.1 Validity & Reliability

Merriam (1998) suggests that issues around validity and reliability are most effectively addressed through the case study design and the manner in which data is collected, analysed and presented, and this is dependent on the research design and purpose.

5.1.1 Internal Validity

Internal validity deals with the question of how research findings match reality, (Merriam, 1998: 201).

There is a juxtaposition posed between many research designs and reality. Reality is considered as holistic, multidimensional and dynamic whereas a single case study observing a single and fixed phenomenon. However, Merriam (1998) identifies six strategies for addressing issues of internal validity:

1. Triangulation, through the use of either, some or all of multiple: investigators, data collection sources, methods of analysis and interpretation to confirm the findings.
2. Member checks, through going back to the participants to check in to see that the data is plausible.

3. Long-term observation, through either long periods of or repeated observations of the same phenomenon.
4. Peer examination
5. Participatory or collaborative modes of research, through the inclusion of participants in all phases of the research.
6. Researcher's biases, through the clarification of the researcher's assumptions, views and theoretical perspective from the commencement of the study.

Within this case study, all of these strategies have been employed. Triangulation occurred through the multiple sources of data collection and methods of analysis, and the use of an outside researcher also helped to ensure further triangulation of the findings. Member checks and participant collaboration frequently occurred with regular checks of the data as I was collecting it and weekly discussions about our journey at staff meetings.

Repeated observations were an integral component of data collection and peer examination was also essential, both as part of meeting the requirements for the master's thesis and through the collaboration within the school staff discussed above. Finally, my own biases were acknowledged from the outset of this study. This was fundamental to creating an effective research design.

5.1.2 Reliability

Reliability is concerned with the extent to which the findings of a research study are able to be replicated (Merriam, 1998). In qualitative research, however, reliability is difficult due to the dynamic nature of human behaviour. Despite this, reliability can be maximized through careful attention to the method used and the data collection, analysis and presentation (Kennedy & Luzar, 1999; Merriam, 1998; Yin, 1993). There are three strategies that can help researchers ensure greater reliability in their findings: first, the explanation of the researcher's own assumptions, views and theoretical perspective behind the study; second, triangulation; and finally, the detailed description of the researcher's process. As already noted, the former two strategies were comprehensively used throughout the research process, and the latter can be seen through the description in this thesis.

5.1.3 *External Validity*

The notion of external validity refers to how generalizable the findings of a study are; that is, how easily can these be applied to other situations. Generalizability is key part of ensuring that the study is of worth to the wider world (Berg, 2004; Merriam, 1998). While the nature of this single case study, focused on a single phenomenon in a single context, makes generalizability more difficult, the use of rich thick description, descriptions of the typicality or commonality of the phenomenon, and the use of multiple sites, cases or situations can help to ensure greater external validity and generalizability (Merriam, 1998). The former strategies are an inherent part of this study; however, the latter was only able to be achieved through the use of purposeful sampling of student participants across the classrooms and the creation of multiple sites through the study of four different classrooms of differing age groups. This considered, however, through the use of these strategies and the nature of the study which is so topical to New Zealand educators currently, this study has been assured of external validity and generalizability to other situations.

6. **Ethical Considerations**

Perhaps the most important consideration in undertaking any research is what ethical principles need to guide the investigation. Historically, early researchers showed little concern for the inherent ethical issues of their research (Merriam, 1998). In recent years, since 1945, ethical codes of conduct have been developed to ensure the safety of both research participants and the researcher's themselves. Merriam (1998) suggests that the most common ethical issues faced in qualitative research studies are concerned with data collection and the development of research findings. In addition to this, are considerations over the relationship between the researcher and the participants, the use of informed consent, the researcher bias and potential power, and the privacy and protection of participants (Bassey, 1999; Berg, 2004; Clark, 1997; Merriam, 1998). For this research study, as part of meeting the requirements of the master's thesis, ethical approval was required from Massey University's Human Ethics Committee. This process required extensive consideration of the research design and all potential ethical issues.

This study was within a school and, with its focus on enhancing student achievement, inevitably meant that children were a central part of my research and would be needed as participants in the study. Massey University's Code of Ethics (2006) makes explicit the principles of research involving any children under the age of fifteen: the research must only be conducted if there is an identified need and it should not put at risk any one child. The need to enhance student achievement and develop implementation of New Zealand's revised curriculum, as noted through the literature, was clear. This meant that, through the design of the study, twelve student participants (three from each classroom) and four teacher participants (including the researcher), were invited and required to give informed consent, with parental consent also required for student participants (*see appendix 6*). Thus, all participants were given informed consent packages containing information sheets in appropriate language and consent forms that were signed and returned once all participants were sure of the research purpose, their rights and their willingness to participate.

The information sheets were comprehensive and clearly explained the purpose of the study for both the school and the researcher to avoid any form of deception (*see appendix 7*). Further, the information sheets also contained all the measures developed to help minimize harm to the participants. Such measures included using the school office administrator to approach and invite potential student participants, outside researcher observations of my classroom, using the school secretary to conduct the focus group interview of the student participants from my own class, pre-arranged scheduled times for observations of classes as well as teacher participant discussions, and the wearing of an identifying article of clothing during observations to make clear to student participants when I was in researcher mode. At no point was any child singled out, and the children approached for participation were nominated by their own classroom teachers and reflective of a mixed-ability range of children.

Confidentiality is also a major consideration and Clark (1997) and Massey University (2006) suggest that confidentiality should be proactively maintained. As such, pseudonyms and codes were used to protect participants' identities and no consent forms were kept stored with any collected data. Further, access to consent forms and collected data was limited to myself and my supervisors.

Finally, I acknowledged my potential bias. My own theoretical position supports the use of curriculum integration and it was my own research and view point that led to the notions of exploring curriculum integration as a means for teaching the *Key Competencies*. Despite this, throughout the study I remained open to the journey the school was taking and all the new and developing ideas that came through the development of the curriculum integration model and its basis not just on the *key competencies* but on a developed curriculum of *Deeper Understandings* that were founded on what we, as a school, identified as the essential understandings behind our learning stemming from combinations of both the *Key Competencies* and the curriculum areas. At all points, I feel, my potential bias had little affect on the overall results but rather led to my full commitment to ensuring that the research was useful.

7. Conclusion

For the outcomes of research to be valid, practice needs to be informed by effective understanding of methodology. This chapter has aimed to provide greater insight into the theory behind the research methodology and provide validity to the methods used in this thesis study.

Case study design was most appropriate: the study was focused on a single phenomenon and was bounded by one school with only three teacher participants and four groups of student participants. Descriptive case study design was chosen as the most effective design to successfully answer the research questions: it allowed for rich and intense description of the school's journey towards an effective model of curriculum integration, based on the *Queensland New Basics Rich Tasks* and New Zealand's *Key Competencies* that enhanced student achievement and reflected the theoretical basis behind the study. As is common in case study design, the data collection methods were interviews, observations and document analysis, allowing for effective triangulation and ensuring validity and generalizability of data. Data analysis was carried out using content analysis methods. Analysis of the research findings are presented in the following chapter.

Chapter Four

THE CASE FINDINGS

1. Introduction

This chapter presents analysed findings of the study. Key themes emerged through the data collection and provide the format for this chapter: teacher understanding in curriculum integration, the curriculum and pedagogy; constraints and the change process; student achievement and student learning through engagement, higher order thinking and transferability. Each theme is investigated chronologically: prior, during and after the unit. Teacher understanding is investigated first in section 2.

Following this, the inevitable constraints and their impact on teacher development are outlined in section 3. Next, section 4, discusses the findings as the teachers went through the process of change. Section 5 shares the impact on student achievement. Finally, the impact on student learning through engagement, higher order thinking and transferability are framed in section 6.

2. Teacher Understanding

As is human nature, the prior understandings the teachers brought to the study were varied and impacted upon by their previous experience. Several key themes around teacher understanding were evident from the data gathered prior to the unit, during the unit and after the unit: these were in curriculum integration, the revised curriculum and teacher pedagogy. Teacher understanding data was based on teacher interviews prior to and after the unit as well as two observations during the unit, teacher planning documents and regular reflective discussion. Teacher understanding of curriculum integration; the revised curriculum (specifically the *Key Competencies*); and teacher pedagogy are all discussed respectively.

The following chart provides an overview of each teacher and their experiences prior to the study, in relation to curriculum integration, the revised curriculum and teacher pedagogy.

Table 4.1 Individual Teacher Summary

Individual Teacher Summary			
<i>Teacher</i>	<i>Years Teaching</i>	<i>Year Level</i>	<i>Professional Development on Curriculum Integration & Curriculum Change</i>
Mike	13	Years 3-4	Participated in <i>EHSAS Graduate Cluster</i> project since its commencement. Attended two full day seminars on curriculum integration. No prior experience in using curriculum integration in the classroom. Had only been using thinking tools from <i>EHSAS Graduate Cluster</i> project.
John (Teaching Principal)	18	Years 7-8	Participated in <i>EHSAS Graduate Cluster</i> project since beginning of second year of project. Attended several professional development seminars during this time, including travelling to Queensland to observe and discuss curriculum integration with model schools there. Had taught and led curriculum integration and curriculum development at previous school for six years. Had also previously used range of thinking tools.
Jane	3	Years 0-2	Participated in <i>EHSAS Graduate Cluster</i> project since its commencement but was unable to attend two full day seminars introducing curriculum integration. No prior experience in using curriculum integration in the classroom or in leading/changing curriculum development. Had only been using thinking tools from <i>EHSAS Graduate Cluster</i> project.

Teacher understanding is explored by examining understanding in each theme: curriculum integration, the curriculum and teacher pedagogy prior to the study, during the study and after the study consecutively.

2.1 Prior to the Unit

2.1.1 Curriculum Integration

Teachers were interviewed prior to beginning the unit and all three teachers showed various understandings of curriculum integration but described it created meaningful learning experiences, making specific links to the authentic assessment created from using the rich task model. The following table shows their explanations of what they understood about curriculum integration.

Table 4.2 - Curriculum Integration: Teacher Understanding Prior to the Unit

	Theoretically	Practically	In the Classroom	Benefits	Risks
Mike	<i>...looking at science, technology, social studies and placing them together with literacy, possibly numeracy... under one context.</i>	<i>... way we teach at Te Tuara School... thinking about the context, following the coverage of the curriculum, so it's a lot of planning</i>	<i>Not very well.</i>	<i>...it does become knowledge; it's attached to their learning.</i>	<i>...maybe coverage – maybe don't go into some areas of interest</i>
John	<i>...there's a spectrum: pure integration is having a learning context that is influenced by all areas of the curriculum... they're purposefully linked so that learning is authentic</i>	<i>... being driven by a context and a main purpose of learning...</i>	<i>...rich learning sessions for the kids; planning with staff on using our planning process - I'm seeking to implement that.</i>	<i>...children drive the learning and they are in the decision making process.</i>	<i>... fear you're going to miss something...</i>
Jane	<i>...when you try and find meaningful experiences that are taught through all areas of the curriculum...</i>		<i>... for mysteries there could be a lot of reading or writing I could link into it, but also science could be relevant, even graphs because we're doing statistics...</i>	<i>... rich experiences and learning</i>	<i>...sometimes it's a little bit deep - I've got to make sure that I'm targeting their needs.</i>

Mike showed some understanding of curriculum integration, discussing a multidisciplinary approach: still teaching subjects separately but linked through a constant theme/issue (see section 2 in chapter 2). However, he understood that curriculum integration is about getting to the real purpose behind learning.

John's description showed greater understanding of curriculum integration as he suggested that there is a spectrum ranging from full integration to the thematic approach and was able to articulate more principles behind curriculum integration.

Jane showed the least understanding and struggled to explain curriculum integration much further than that it created meaningful experiences. Jane's description of curriculum in a practical sense was reflective of a very multidisciplinary thematic based approach.

2.1.2 The curriculum

At the point of commencement of the unit, the *Rich Learning* model we were using had been developed as such so that the *Key Competencies* provided the basis for our deeper understandings – which were the focus and driver for the learning. As such, teacher understanding of the new curriculum and, specifically, the *Key Competencies*, was based

on how we had explored them as a school through rich learning. Once again, understandings were varied amongst the three teachers. The table below shares their responses about the *Key Competencies* and the curriculum, with the role they play in teaching and learning programmes and benefits and/or challenges.

Table 4.3 - Key Competencies and the Curriculum: Teacher Understanding Prior to the Unit				
	What are the Key Competencies?	Where do the Key Competencies fit in teaching and learning?	Benefits	Challenges
Mike	<i>...fundamental understandings and skills that children need to be successful later in life.</i>	<i>...they align really well together with the rich learning. ...it's right through.</i>	<i>...a shared language amongst teachers...</i>	<i>Learning the lingo.</i>
John	<i>...the strategies, skills and understandings that kids need to have... they're cross-curriculum. They're necessary building blocks...</i>	<i>...part of rich learning; targeted situations of individual kids or small groups where there's an issue... ...they need to be taught in all classes consistently for them to be really effective.</i>	<i>...children more as individuals - define children around the key competencies. ...give teachers some very clear tools about child management.</i>	<i>The actual definition was initially a stumbling block. The real stumbling block is the practicality of how do you teach something that's not easy to assess</i>
Jane	<i>...all based on how you develop as a person but in ways that you can succeed when you're an adult, in the real world too...</i>	<i>...rich learning because it is our deeper understandings and it comes through quite easily. ...it's just language used, "are you contributing nicely?" ...it's hard to think about teaching them as well as the curriculum stuff.</i>		<i>...how to make them fit into your planning.. ...my understanding needs to be deeper.</i>

Mike noted how he only taught the *Key Competencies* through *Rich Learning*, but suggested that this was only temporary while still exploring them. He described the *Key Competencies* as fundamental to life-long learning and highlighted the need for a shared language for teachers and children.

Similar to Mike, John described *Key Competencies* as foundational and as a core aspect to be in all learning, though suggesting that some would be more suitable for specific areas. John's position as principal is reflected in his lengthy discussion of the *Key Competencies*, showing his extensive knowledge of the competencies and revised curriculum as leader in development of these.

Jane suggested that she understood the *Key Competencies* but could then not name or articulate specific details about the competencies. Jane did recognise the link of the *Key*

Competencies to Rich Learning and other learning, but only saw them as fitting within rich learning, primarily because Jane saw the *Key Competencies* as being the *Deeper Understanding* and therefore were easily taught through rich learning

2.1.3 Pedagogy & Expectations

While the teachers were not directly asked about their pedagogical approaches, their understanding of pedagogy before the unit commencement was obvious through their discussions of curriculum integration and the curriculum, as well as the impact of these on their planning, teaching and assessment. The comments from each teacher are outlined in the table below.

Table 4.4 - Teacher Pedagogy & Expectations: Teacher Understanding Prior to the Unit				
	Reflecting on <i>Rich Learning</i> ...	Reflecting on <i>New Basics</i> ...	Links to personal pedagogical practise	Teacher Expectations
Mike	<i>...thinking about the context that we're using... following the coverage of the curriculum so it's a lot of planning and looking for ideas to make it fun and interesting.</i>	<i>...looking at deeper questioning; teaching children to be questioners, and problem-solvers... asking the questions, finding the answers to those questions, redefining those questions and going deeper.</i>		<i>... shared language amongst all teachers...</i>
John	<i>... having a learning context that is influenced by all areas of the curriculum... they're purposefully linked so that learning is authentic.</i>	<i>Children learn in context. Learning needs to be authentic, and children should drive learning; assessment of learning should be throughout - may culminate in something at the end.</i>	<i>...let the kids drive it, along the way there's decision making times; start with whole class and move that into small group or individual, and by the end it's more individual-oriented.</i>	<i>[Rich Learning] makes them better long term learners, over time, better problem-solvers because they learn in context so they better at applying things across real life situations.</i>
Jane	<i>I think curriculum integration is when you try and find meaningful experiences that are taught through all areas of the curriculum...</i>		<i>...sometimes [rich learning], it's a little bit deep sometimes and I've got to look and make sure that I'm targeting their needs...</i>	

Mike showed a good understanding of the need for depth in learning and the use of a shared language, consistency, problem-solving and questioning in learning. Mike also showed concern over ensuring curriculum coverage through curriculum integration and noted his struggle to integrate effectively, suggesting that while Mike had a good understanding of effective pedagogy, he was still developing this in his practice.

Similarly, John discussed using curriculum integration and *Key Competencies* to meet individual needs and the value of contextual and authentic learning. Also, John seemed to have a strong theoretical basis for using curriculum integration.

Jane noted the importance of meaningful learning that is targeted, but showed lack of effective pedagogical understanding through her suggestion that the *Key Competencies* were something that were “added-on” as something extra to teach, rather than something to embed in all learning. Jane’s concern also that *Rich Learning* had previously been “too deep” at times for her children, perhaps reflected a lack of understanding of how to effectively get depth in learning while still targeting it to their level.

Teacher understanding prior to the unit was varied in all areas. Curriculum integration seemed to have the least teacher understanding with two out of the three teachers describing a multidisciplinary approach (see chapter 2). All teachers recognised the importance of the Key Competencies but none were implementing these regularly in their programmes, and Jane particularly struggled with understanding these. Teacher pedagogy was reasonable but use of effective pedagogical tools seemed to be lacking.

2.2 During the Unit

Thirty minute observations in the classrooms were carried out at two points during the study: in the second week of the unit and the sixth week of the unit. An observational matrix tool, developed by lead teachers within the *EHSAS Graduate Cluster*, was used to guide the observations (refer to section 4.3.2 in chapter 3). The individual teacher development for Mike, John and Jane were noted for each observation on the tool so that changing understandings could be monitored (see appendix 8).

During the unit teachers were involved in several professional development sessions that led to changes in their understandings after the unit. These sessions and their impact are now briefly outlined before changed teacher understanding is shared in the next section.

Planning for the unit investigated in this study took place three weeks prior to its commencement. However, within two weeks, it was noted that a professional development session on the new model and curriculum integration was needed. A teacher call-back day was held that reviewed the model and its components: specifically on defining the *Deeper Understandings* and the *Deeper Knowledge* and how to use the productive pedagogies to unpack the learning effectively. It was also decided that we would create our own curriculum. A set of *Deeper Understandings*, encompassing both the *Key Competencies* and all curricula areas, was developed by myself as leader of the project and then reviewed, refined and set by the staff.

Further professional development took place through the *EHSAS Graduate Cluster*. An educational consultant, Hanan Harrison, who had worked with the cluster previously, visited our school reviewing our current progress, documentation and model for *Rich Learning* and also observed all classrooms, then sharing feedback and insight with all staff. This also led to the creation of the school's learning dispositions. These were initially drafted by me and then, through professional development sessions on learning dispositions and extensive staff discussion, were developed so that they completely encompassed the *Key Competencies* and provided further validity to the *Rich Learning* model.

Such development impacted on teacher understanding significantly: both positively and negatively. Greater clarity on curriculum integration and our model was achieved; especially in relation to the *Deeper Understandings* and the school's own curriculum and its relationship to the revised New Zealand curriculum. However, the speed with which the *Deeper Understandings* and learning dispositions were created led to confusion as there was not sufficient time to consolidate understanding of these.

2.3 After the Unit

2.3.1 Curriculum Integration

All teachers showed greater understanding of curriculum integration after working through the *Rich Learning* unit. The table below shows their responses when asked how their understanding of curriculum integration had changed since the start of the study.

Table 4.5 - Curriculum Integration: Teacher Understanding After the Unit

	Changed Understandings...	Benefits	Risks
Mike	<i>...it's just more purposeful - that deeper understanding helps me to make them fit together better. ...starting with the big idea, really helps... the tasks fall naturally out of it, they're more focused -you know they really tie in with our dispositions. ...it's clearly defined planning so you know what you need to assess.</i>	<i>They have a big idea as the main thing now to hook the new ideas - it's scaffolding progression...</i>	<i>...making sure I use that shared language - getting the children to use the language, getting them to understand what the language means.</i>
John	<i>...more emphasis along the lines of the deeper understanding and the learning dispositions. ...it's actually put a new vigour in to the teaching side of things because there's more purpose...</i>	<i>There's more rigour about why we do something... it's good to hear the kid's voices coming through and say why are we doing that?</i>	<i>...keeping the deeper understanding the main thing.</i>
Jane	<i>...it's quite hard sometimes to be truly integrated. The more I think about planning the more I try to integrate lots of curriculum areas that we've identified... so we've got the learning intentions or the deeper understandings and trying to find ways that naturally fit...</i>	<i>...the kids really know more about themselves...</i>	

Mike showed much greater insight into curriculum integration at the end of the unit.

Mike identified how the use of a *Deeper Understanding* allowed more natural and purposeful integration and how he was able to more competently create integrated learning experiences. However, his description continued to reflect a multidisciplinary understanding as he still identified curricula areas separately and taught them separately rather than drew on curricula areas as they were relevant to the learning (see section 2.4.2 in chapter 2).

John showed similar understanding to Mike. John, who had a reasonable understanding of curriculum integration prior to the unit, seemed to refine this further as he noted greater focus on process rather than product and the importance of developing a shared language and an approach to how we learn through the learning dispositions. John also noted the importance of ensuring the model was rigorous and purposeful as well as selectivity in planning learning activities, showing development in understanding that integration should occur naturally.

The most notable change in understanding was with Jane as she discussed the importance of trying to find ways to integrate naturally and the difficulty in making links between learning for both her and the children. Previously, Jane's understanding had

shown a focus on trying to make curricula areas fit, rather than be selective and use those that fit naturally. Jane noted that she still tries to integrate but looks for more natural fits, showing a greater understanding that learning should link purposefully.

2.3.2 Key Competencies and the Curriculum

Teacher understanding of the curriculum was directly impacted by the creation of the *Rich Learning* curriculum: the *Deeper Understandings* and the learning dispositions.

Changed teacher understanding was still varied; all had progressed but understandings were impaired by confusion as teachers began to understand the new developments to our curriculum. In the table following, the teachers' responses to how their understanding of the *Key Competencies* has changed and of the new school curriculum are depicted.

Table 4.6 - Key Competencies and the Curriculum: Teacher Understanding After the Unit			
	Changing understanding of Key Competencies	Understanding the new school curriculum: <i>Deeper understandings</i> and learning dispositions	Challenges
Mike	...have a clear language, a clear direction; gives relevance to things we've always had but the importance of them has come more to the top.	...the deep understandings got to the real purpose of the competencies. Dispositions... - having clear ones is really important that goes right through school so the children get a common language and they understand and unpack those properly and regularly;	... use that shared language - getting the children to use the language, getting them to understand what the language means.
John	It's given them a place now in the teaching process... it's given us a language. ... now that we've got clear learning dispositions that encompass the key competencies, I now know what's the key ones to focus on.	It's made the planning easier in the sense that there's a natural flow now... it's made it more focused.	
Jane	...the ones we concentrate on a lot for me are the relating to others, and managing self, no not managing self, oh I can't remember what it is now...	... woven together so you're looking at the deeper understandings and seeing the links in the dispositions and then you can see the links with the knowledge and the key competencies	... remembering them... the key competencies and then I'm now getting my head around the dispositions and trying to just match them so I can link them quite easily.

Mike showed much greater confidence in his understanding of the *Key Competencies* and explained the *Deeper Understandings* that had been developed as getting to the real purpose of learning in the curriculum. He could clearly see and articulate how they embedded the revised curriculum, including the *Key Competencies* within them. He also demonstrated good understanding of the concept of learning dispositions and their

importance. However, he struggled to see the link between the dispositions and the *Key Competencies* and had to be prompted to make this link.

John highlighted the significance of creating a place for *Key Competencies* in the school's teaching and learning programmes and showed excellent understanding of the development of the school's curriculum; the *Deeper Understandings*, *Deeper Knowledge* and learning dispositions. His involvement, from a management level, meant that he had more development with this and as principal, he was involved in regular meetings regarding the revised curriculum. This is reflected in his purposeful thoughts into the application of the *Key Competencies*.

Jane felt that her understanding of the curriculum had not really changed, but deepened. Despite this, Jane still struggled to explain the *Key Competencies*. In regards to the school's new curriculum, Jane seemed to see the links but was unsure as to how they fitted together and why they were linked suggesting that further professional development around the *Deeper Understandings* and the learning dispositions was needed for her.

2.3.3 Pedagogy & Expectations

Teacher pedagogy showed significant improvements throughout the unit and this was evident in the teachers' understanding at the end of the unit.

Mike had previously felt that he had engaging activities but struggled to link these and he discussed how he was able to create links and transferability of ideas much more than he had previously, suggesting significant progress in his understanding of pedagogy.

John had reasonably good pedagogical understanding prior to the unit but perhaps had not been always able to effectively put this into practice. John highlighted the ease of planning, the natural flow of learning development with purpose and without clutter and the ease of assessment as it was so linked to every part of learning development which shows his development in applying his pedagogical knowledge.

Jane also showed progress in her pedagogical understanding and her expectations of the children. Jane identified how the model created greater scaffolding of learning and the

change for her in the reversal of her planning process and in the transformation of her role to a facilitator as well as her expectation for her children to question in learning.

Table 4.7 - Pedagogy & Expectations: Teacher Understanding After the Unit			
	Reflecting on their pedagogical practise in Rich Learning...	Reflecting on the new school curriculum	Reflecting on Teacher Expectations
Mike	<i>...starting with the big idea and everything falls out from that... it's clearly defined planning so you know what you need to assess – so very focused.</i>	<i>They have a big idea as the main thing now to hook the new ideas on to that so that it's scaffolding progression and it's always coming back to that big picture thinking.</i>	<i>...having clear [learning dispositions] is really important that goes right through school so the children get a common language and they understand and unpack those properly and regularly; it's repetitive so that they really understand what they are and it becomes part of who they are</i>
John	<i>It's cleared out a lot of the clutter in the planning ...assessment-wise, it's made it really easy because you can't move on in the process of developing the understanding... and that influences the next step in planning and the next step in learning.</i>		<i>...it's given us a language... ...they've [the students] been more involved now - ...realising that it's not about how much we get through, it's about the quality of what we get through.</i>
Jane	<i>...the process of doing it is different; going from the deep understanding and then dispositions and knowledge and key competencies and questions and then rich task... and then working backwards. ... scaffolding the process of them going through an inquiry</i>		

All teachers showed increased understanding in all areas though they were still greatly varied at the end.

Mike showed the greatest progress in understanding as his experiences and effective pedagogical understanding seemed to have set him up well to develop his understanding of the school's model of curriculum integration and the curriculum. John showed the least progress in understanding: seeming reflective of his high understanding prior to the study. Jane also showed significant progress in her understanding: she became aware of constraints such as her own understanding and in noting the difficulty of implementing curriculum integration.

Understanding of teacher pedagogy and the curriculum had been developed the most, with teachers identifying and using pedagogical tools such as Bloom's Taxonomy, De Bono's Thinking Hats and Action Learning Inquiry models more regularly. This was evident in teacher planning as the planning model encouraged focus on articulating the

different tools to be used. The involvement of all staff in creating the school curriculum had also been successful as there was joint ownership of the new deeper understandings.

3. Constraints

3.1 Prior to the Unit

All teachers identified constraints to our school *Rich Learning* development prior to beginning the unit. As noted previously, Mike shared concerns about ensuring adequate curriculum coverage the challenge in developing the shared language around the new curriculum and being able to integrate effectively.

John was also challenged by defining *Key Competencies* and the time needed to develop good understandings in all staff. Particularly, John noted the constraint of teacher's own fears in losing control of the curriculum and even in letting those with the knowledge lead.

*I think there's that fear that teachers will lose control but I don't see that as a risk, I see it as a natural fear that we have in controlling our classroom.
(John)*

These comments were triangulated by Jane's noted constraints of her own understanding and how to fit the new curriculum in to her planning.

You've got this kind of two-way thing going where you know they're important and you want to teach that but you keep going back to the knowledge content so I probably don't know them as deep... (Jane)

3.2 During the unit

Teacher clarity around each of the components of the rich learning model had been varied even before the unit and this continued to be a constraint. Of particular note was confusion between deeper understandings and deeper knowledge that was creating

issues in planning. As with other issues that arose, that confusion was overcome through regular reflective discussion.

Time was the constraint noted by all teachers and teacher understanding of the model only exacerbated this constraint.

3.3 After the unit

Teacher understanding remained a constraint as time for exploration was restricted and understanding would need to be developed over several units of learning. Despite this, the constraints and challenges articulated by all teachers after the unit were minimal.

Mike, while suggesting that the development of shared language had been good, described this as a challenge also.

John also noted the use of shared language and keeping to the learning focus as constraints. He also explained the issue of transferability between his teaching and the other teacher in his classroom, particularly with using consistent language and processes.

I mean we've had an issue there, with [the other teacher] and myself, with the two teachers that they're not even transferring between the two teachers but I've seen them do that more now because I think we're both using a) a common language and b) we're linking into that bigger understanding so the kids are realising it's not subject orientated, it's not curricula orientated, it's whole learning orientated, so hopefully that will get better. (John)

Jane was challenged in trying to integrate lots of areas as well as constrained by her own understanding of the school's new curriculum: *Deeper Understandings* and learning dispositions.

As new ideas and developments were trialled, constraints were overcome and teacher understanding increased. Further understanding continued to be developed through the invaluable reflective discussions the team regularly engaged in on a weekly basis, these

were highlighted as critical to overcoming the other constraints noted such as time and understanding of the model components.

4. The Change Process

4.1 Prior to the Unit

All staff reflected that the change process to the point before the unit had been well-led at a manageable pace. The importance of the change being a whole school focus was noted and the significance of shared discussion as a staff was considered most valuable.

Mike described the change process as dynamic but purposeful...

...the purpose has been refined. My understanding of the purpose has kept being refined ...and the actual learning that happens, the understandings has been getting more and more depth to them... (Mike)

John discussed managing change from several perspectives: in the class with the children; amongst the staff; and amongst colleagues outside of the school. John also noted the value to him of the support and discussion with colleagues from other schools as a means for managing change effectively.

Jane discussed similar ideas and felt that the changes had moved at a slow pace at this point, which was good for her and had been in-depth with opportunities to explore, trial and review as a staff. Jane noted the key affect had been in changes to her planning.

I think we're doing really well ...we're taking a really good, slow in-depth look, and we're not trying to just, this is it and this is how we're doing it, we're trialling and there's always discussion and stuff so I think we're doing that really well. (Jane)

The variability of individual teacher understanding and time needed for effective development clearly emerged as key issues in managing the change process.

4.2 During the Unit

The data gathered for the change process during the unit was mostly through the staff meeting minutes and my own anecdotal notes surrounding our regular reflective discussions.

Key issues in the change process emerged as: teacher understanding of the model and the lack of time to work on development of these understandings; the confusion over the different components of the model and how to effectively align these; lack of rigour to the model; and the identification for further adaptation and development of the model. Despite this, teacher confidence in the model kept improving due to the effective leadership and collaborative support. Decision-making was shared and discussion was open, allowing for all staff to feel valued and well-supported as well as still committed to effecting this change.

4.3 After the Unit

As was prior to the unit, all teachers felt the process of change was being generally well-managed though they were still facing challenges.

The use of discussion and shared language was highlighted by Mike, who felt that the school had still been well-led through this change.

I think the school's been well led - we've had good opportunities for everyone to think and offer their ideas so that you don't get narrowed into just what you think - you hear what others think and it changes your own thinking... (Mike)

Similarly, John also noted the flexibility and adaptability of staff to be critical as well as the open and regular reflection, discussion and planning. John felt that reflection and change had become normal for the school.

Jane suggested that good teacher communication, a shared focus and the establishment of the school's learning management system as a central database all provided the tools for effecting successful development through the change process.

*I just think, with the whole teacher communication and we're always talking about it and giving ideas... the ultranet, where it's there for us, whenever I think I want to look up something and then it's just coming down through the teachers into the school...
(Jane)*

Collectively, teachers responded well to the change process and noted that it had been implemented considerably, well-led and well-supported. Despite this, the difficulties of the compressed timeframe had an impact on the change process as teacher understanding, as already shown, was still greatly varied. Both Mike and Jane, at this point, perhaps did not yet realise the extent to which they did not understand the new developments. Further to this, Mike and Jane's multidisciplinary approach showed that they were still in the process of letting go of their fear of curriculum coverage and their traditional pedagogical approaches.

5. Student Achievement

Teachers were asked, prior to the research unit, to discuss the impact of the school's *Rich Learning* development on student achievement. Differentiation between the impact on student achievement and student learning was not made by myself or the teachers at the time, but has been retrospectively separated in the findings.

5.1 Prior to the Unit

Mike noted the key impact to this point had been that the children showed deeper knowledge and knowledge retention.

I think their understanding stays there. It is an understanding; it's not knowledge so it doesn't really get lost.
(Mike)

John expressed similar views to Mike, describing how children were transferring knowledge and learning more easily to other situations or contexts.

I think it has a long term influence that's hard to measure now, in the sense, that it makes them better long term learners, over time, better problem-solvers because they learn in context so they get better at applying things across real life situations.
(John)

Jane noted that the impact had been positive but did not specifically articulate this in relation to student achievement.

Overall, all teachers discussed a positive impact on student achievement from rich learning but the extent of this seemed unclear.

5.2 During the Unit

The students were observed at two points during the unit, using an observational matrix designed through our involvement with the *EHSAS Graduate Cluster*.[☞] These observations took place at the same time as the teacher observation points (See appendix 9 for results).

5.2.1 Juniors (Year 0-4)

Most students were able to articulate what and how for their learning but could not articulate why they were learning this. The Year 0-2 students struggled to articulate why, though this may reflect their developmental level. All students often questioned and

showed greater evidence of critical and creative thinking. In this instance also, all students began to recognise when problems arose in their learning and find ways to solve them.

We're learning about mysteries... to problem solve you find some clues to get some information and put it all together and figure it out...
(Jacob, Year 2, observation 1)

The Year 3 and 4 students showed some questioning as evidence of critical thinking, for example, "But how do we know these clues are real?" In the second observation, all students showed improvement in their achievement. All students demonstrated greater connections to other learning and most Year 3 and 4 students could articulate the what, how and why for their learning.

We're learning about solving problems... you problem solve by breaking codes or you come back and get more evidence...
(Jen, Year 4, observation 1)

5.2.2 Seniors (Year 5-8)

The Year 5 and 6 students were consistently able to articulate the what, why and how for their learning in both researcher observations and similarly, most Year 7 and 8 students could articulate the what, why and how for their learning in the second observation.

[We] learnt what clues to look for; question information, check whether it's correct or sounds right; we need it in everyday life...
(Matthew & Daniel, Year 5/6, observation 1)

A high level of critical and creative thinking was evidenced amongst all students as they sought to actively make connections in their learning, identifying and finding alternatives and next steps for learning. The students were often able to recognise problems and ways of solving them and they needed little support in their independent learning, indicating a high level of knowledge and understanding.

Junior children showed improvement, particularly the Year 3-4 children who could mostly articulate all three aspects about their learning: what, how and why. The senior children showed significant improvement with the majority able to articulate all three aspects. Evident at all year levels were children demonstrating increasing frequency and depth of critical thinking. .

5.3 After the Unit

The findings for student achievement were gathered from several sources: teacher post-interviews, student group interviews and classroom observations towards the end of the unit.

5.3.1 Juniors (Years 0-4)

The level of achievement in the junior classes was clearly enhanced. The Year 1-2 students were mostly able to articulate two out of three aspects for learning. These students could not clearly articulate why they were learning about this but were able to explain how they were learning. The students were observed to sometimes recognise problems and showed progressively more use of creative thinking and questioning in their learning.

Researcher: So what do you do with clues?
Charlotte: Find who it is.
Lily: And so they can know where to go.
Researcher: Why do you think you were learning about solving mysteries?
Jacob: So we can get better at solving a mystery.
(Year 0-2 group with researcher)

Jane suggested greater achievement for her students as they were not so knowledge focused and showed greater understanding of the process of their learning.

...they are definitely not so knowledge focused, although that's still important, but they, they are thinking outside the square,... coming up with..., ways or ideas that are not just what we would normally, , answer... right and wrong sort of thing.
(Jane)

The Year 3-4 were observed to articulate the “what” and “how” for learning progressively more towards the end of the unit. Also observed was these students increased questioning, critical thinking and use of more creative strategies and alternatives as they worked to solve problems. These children also identified problem solving as being able to find a question, gather clues and information and put it together.

Researcher: Anyone know what the steps are to solve a problem... some of the things you need to do?
Jen: You need to have a question and try to get clues.
Researcher: What do you do once you have some clues?
Jen: Put them together.
R: What else Nicola?
Nicola: Solve it.
(Year 3/4 group with researcher)

Mike identified that his students understood a lot more at the end of the unit and had better understanding of why they were learning.

I think they have a better understanding of why they are doing it - They always know what they're doing but now they know why and they know how it links from one activity to the next.
(Mike)

5.3.2 Seniors (Year 5-8)

The senior students were interviewed in two groups: year 5-6 and year 7-8. The Year 5-6 students were able to articulate their focus for learning as problem-solving and thinking critically. These students could clearly explain their learning development: what, why and how; and showed significant evidence of the connections made in learning, use of critical analysis of information to solve their problems and ensure validity of information.

November 13, 2010

Marie: We had to be a critical thinker.
Interviewer: Okay, how did you learn to be a critical thinker?
Daniel: We were going back over what we've already looked and just trying to find the little bits, behaviour and seeing what's missing..
Interviewer: You mean the details – the little bits?
Daniel: Yep.
Interviewer: Okay, Matthew?
Matt: See what information is right to different information that we get.
Interviewer: Oh, so you're like checking your information, okay.
Daniel: So you're reflecting on it.
(Year 5/6 group with interviewer)

The Year 7-8 students achieved similarly. They were often able to articulate the what, why and how for their learning and made connections using a high level of critical and creative thinking as they recognised problems and methods to solve them. These students, while struggling to separate the context of mysteries from the “what” in their learning; problem solving, could clearly articulate the main steps of the problem-solving process and judged their own ability on how successfully they followed this process and their ability to find credible information in finding answers.

First, you need to turn the mystery into a question and then you need to think of your hypothesis. And then you need to gather your evidence and then you compare and you prioritise and then you come to your conclusion.
(Jim, Year 8)

As a senior teacher, John suggested that student achievement was clearly raised and was evidenced through strength of their understandings in their culminating rich assessments.

...certain kids this term, when they're dealing with information at the end and in processing would normally just cut and paste - have done the most amazing analysis and the most amazing comparative work across websites and across information that you wouldn't expect from them and it's 'cause they've felt like they're the expert... on deciding what the truth is.
(John)

Table 4.8 - Summary of Changing Student Achievement

	Prior	During	After
Year 5-8	<ul style="list-style-type: none"> • Depth in understanding evidenced. 	<ul style="list-style-type: none"> • Consistently able to articulate how, what and why for learning. • High level of thinking evidenced. • Competent use of problem-solving. 	<ul style="list-style-type: none"> • Consistent and concise explanations of how, what and why for learning. • High level of thinking developed. • Competent identification and use of range of problem-solving methods. • Significant achievement for all students.
Year 0-4	<ul style="list-style-type: none"> • Impacted positively on by rich learning • Depth in understanding evidenced. 	<ul style="list-style-type: none"> • Mostly able to articulate 2 out of 3 aspects: how, what and why for learning. • Often using questioning. • Improvement in understanding noted between two observations. • Some high order thinking. 	<ul style="list-style-type: none"> • Mostly able to articulate how, what and why for learning. • Struggled to separate learning focus from context at times. • Some high order thinking. • Often used problem-solving process. • Enhanced achievement noted for all students.

Overall, all students showed above average achievement in critical thinking and problem solving. Student understanding in learning was thought by teachers to be higher across all year levels and student achievement was notably greater than would normally be expected when looking at the revised curriculum level development and students' previous learning development. Students' rich assessments presented depth and clarity in understanding that had not been evident in previous thematic units and the level of critical and creative thinking had been developed more extensively as seen in student discussion and their assessment tasks.

6. Student Learning

Three themes in learning emerged: engagement, higher order thinking and transferability, which interestingly were all areas highlighted in the literature review as being enhanced through curriculum integration (see chapter 2).

6.1 Engagement

6.1.1 *Prior to the Unit*

Engagement refers to the level of interest, focus and persistence students show in learning tasks. Prior to beginning the unit of study, the school had already begun developing and using curriculum integration to some extent due to development of the Queensland *Rich Tasks* through our *EHSAS Graduate Cluster*. All teachers noted the potential for high engagement as we created our own model and had noted the evidence of increased engagement already, despite only limited forays into using curriculum integration. John had noted greater motivation in learning at this point and looked forward to children having opportunities to drive their own learning and work at a pace and level appropriate to their needs.

6.1.2 *During the Unit*

6.1.2.1 *Juniors (Year 0-4)*

In the initial observation, engagement was evidenced often but not to a high level. However, this changed in the second observation and akin to the findings for the senior students; all students demonstrated high engagement, persistence and connections in their learning.

The students were observed to often be engaged in thoughtful conversations as they worked on their problem solving. For example, two students were heard discussing their disappointment at not being able to find the information they needed to validate whether a picture of a two-headed man was actually real or not. As I observed in these classrooms each time, I noted several conversations similar to this in each session.

6.1.2.2 *Seniors (Year 5-8)*

Student engagement was high through the learning unit for these students. While the Year 7 and 8 students showed some engagement in the first observation, at other times all students showed engagement through their tendencies to persist, make connections and seek help in their learning. Observations of student discussions showed enthusiasm and

focus in the learning, and student's willingness to engage in questioning and debate amongst the whole class was common.

*I like figuring it out... like the challenge, if I don't get it; I try another strategy and keep trying.
(Year 5)*

6.1.3 *After the Unit*

6.1.3.1 *Juniors (Year 0-4)*

High levels of engagement were also observed at this level throughout the unit. Students spoke with great enthusiasm after the unit as they recalled their experiences and what they had learnt.

Because we had to find out things around the world like [Jane] would go around the world with Penny and she would do things with Penny and she would send us messages everyday and we would have to find out codes to find out where she was going next.

Jane suggested that the entire process had been highly engaging for all her students and how her students challenged themselves much more frequently through the unit.

Mike felt the intensity of student engagement was reflected in their much greater achievement and understanding.

6.1.3.2 *Seniors (Year 5-8)*

Students at this level evidenced high levels of engagement throughout the unit. Students, themselves, noted particular engagement through the inquiry and problem-solving process, and their opportunity for independence and choice.

Jim: 'Cause like I have never done that kind of thing before like how to prioritise and compare information... (Year 8)

John suggested that learning through this unit was more engaging than it had ever been as the buy-in of students was much higher and they were clearly more motivated to

know what was next, to take responsibility for their learning and their persistence through completing the problem solving process.

I think it's engaged them more than they've ever been engaged – they're more interested in the rich learning, the buy-in is higher so already they're motivated to learn... and that shows in the fact that they want to know what's coming next.
(John)

Engagement was high across all age levels throughout the unit of study. Student choice and direction of learning seemed to be the key reason for this as well as the opportunity for new experiences and a different way of approaching their learning.

6.2 Higher order thinking

6.2.1 Prior to the Unit

Jane discussed how the structure of the rich learning helped provide focus and purpose for the children in their learning and the effective scaffolding of learning.

...knowing where they're going, so they have this point at the end that they know that they're getting to but I think it's all the in between stuff that you do with them that builds on their understanding and knowledge...
(Jane)

Mike discussed how rich learning provided the basis for the development of key skills, strategies and tools such as problem-solving and noted that the depth of learning was enhanced each time.

6.2.2 During the Unit

6.2.2.1 Juniors (Year 0-4)

Students demonstrated some questioning in the first observation, but evidence of further critical or creative thinking was rare, as was the recognition of problems and ways to solve them. Despite this, some understanding was demonstrated as seen in the following comment:

*You reflect on how something was before and see what is different – look at the clues, gives you evidence and information and you can figure out what happened.
(Year 2)*

The second observation yielded significant enhancement of higher order thinking. Students periodically recognised problems and solutions, and more questioning and critical thinking were evident.

6.2.2.2 Seniors (Year 5-8)

Frequency and level of questioning improved from the first to second observation for all students so that they were often questioning, making connections and identifying next steps in their learning. When asked what they would like to ask witnesses of a video clip the students were debating the truth of, some responses were...

What other proof they have? (Year 6)
What made them think it was a UFO? (Year 5)

All children showed a high level of reflective, critical and creative thinking: finding various alternatives, drawing on a range of strategies and following the problem solving process successfully. Students often recognised, explored and devised solutions to problems, for example, a Year 8 student suggested, “*But anyone can add to Wikipedia*” and they then discussed how to ensure credibility and reliability of different websites.

6.2.3 *After the Unit*

6.2.3.1 *Juniors (Year 0-4)*

Similarly, students at this level engaged in higher order thinking much more comparatively than they had been evidenced to in previous units of learning. Some students were able to self-assess through active reflection on their learning development, demonstrating their development of higher order thinking and they could also identify simple steps to problem-solving.

Researcher: What was the most interesting thing that you learnt?
Lily: About Ping Ping.
Researcher: What about Ping Ping?
Lily: That he was real - and if he was taller than the shoe or not.
(Researcher with Lily, Year 1)

Students were observed to engage in much more questioning, making connections and critical thinking as they worked to compare and contrast and understand not to take things at face value. Students also showed greater creativity in finding alternatives for and strategies to solve their problems.

Researcher: So when you looked at all the clues that you got, all the criteria, [Jane], did she fit all of them?
Robbie: Mhmm - she likes coffee but now she's saying she doesn't like coffee anymore.
Nicola: We were sure because we found her, we found Penny inside her cupboard.
Researcher: But someone could've put it there?
Jen: But she would've saw.
Nicola: Yeah, she would've found it and given it to us if someone had put it there.
(Researcher with Year 3 and 4 group)

Jane noted how her students had begun to question the truth of things.

I think they're challenging themselves a lot more - just with their ideas and the way they come up with things and, and, you know, not, not thinking everything's true all the time. (Jane)

6.2.3.2 Seniors (Year 5-8)

Students at this level were able to clearly articulate the steps in problem solving processes and inquiry. The use of critical thinking was regularly undertaken through reflection, analysis and evaluative strategies. Questioning and the search for alternatives was also increasingly used and noted by students in their interviews. Students were actively seeking to make connections in their learning and were able to identify next steps for learning.

...now I know that I've gotta go back and look at it, instead of just saying who I think it was. (Daniel, Year 6)

John recognised the frequent use of higher order thinking throughout the unit and was able to clearly see greater development of this.

...they have done the most amazing analysis and the most amazing comparative work across websites and across information that you wouldn't expect from them. (John)

Higher order thinking processes were used more often by the senior students, which would be expected as junior students developmental levels make higher order thinking more difficult to develop. All students showed clear development of higher order thinking at different points during the unit.

6.3 Transferability

6.3.1 Prior to the Unit

All teachers noted the increased opportunities for transferability of learning but this was still in its early stages and was not being maximised through their planning.

*...learning all those skills at the performance, and then me saying to them - now we're going to do the three little piggies at our own school assembly, what did we learn and how could we put it into, into that - so it's kind of showing them that they can use it in other ways.
(Jane)*

6.3.2 During the Unit

Transferability was often observed for all students as they often made connections to other learning as well as the use of problem solving and critical thinking in other areas of life and later in life.

6.3.3 *After the Unit*

6.3.3.1 *Juniors (Year 0-4)*

Most students at the junior level understood that the problem solving process they were using would help them to solve other problems however some of the younger students made the connection that their learning was useful as it would help you find things. Jane observed her students in applying the solving of mysteries to different activities while Mike suggested that his students were able to connect and apply many ideas to learning outside of the *Rich Learning* unit.

Mike: Well it transferred really nicely to our statistics unit - question, gathering our information, looking for patterns and come up with conclusions.
Researcher: And they were able to see the links themselves?
Mike: Yeah, really clearly saw the links. It was really good to do it together.

6.3.3.2 *Seniors (Year 5-8)*

Senior students demonstrated transferability of their learning as they made links between the problem solving processes they were using to solving other problems in their lives and develop the experience and the skills necessary to solve problems later in life.

Interviewer: Now tell me why were you learning about this?
Daniel: To give us more experience in life.
Matt: So if we became a cop or something that we would to be able to know how to solve a mystery.
Marie: So we know what the spread of problems are and how to solve them.
Interviewer: Right, okay. They're very good reasons. Any other reasons that you were learning about these things?
Daniel: Just to learn them in your lifetime.
(Interviewer with Year 5/6 group)

John found his students able to independently and actively use the problem solving process in different ways.

Transferability was evidenced in all students' learning, in both the use of problem-solving and in critical thinking.

7. Chapter Summary

The findings discussed in this chapter have been concerned with teacher understanding of curriculum integration, the curriculum and pedagogy; the constraints and process of change; student achievement; and student learning through engagement, higher order thinking and transferability.

Teacher understanding, in all aspects, showed significant improvement though teacher understanding, as a whole, was still greatly varied amongst staff. While constraints continued to emerge, these were primarily overcome through shared discussion and development. The change process was highlighted by all staff as well-led and developed although teacher understanding about curriculum integration needed to be developed further.

Student achievement showed enhanced levels of achievement after the unit when compared with previous levels of achievement in thematic units and student learning was greatly enhanced in all areas of engagement, higher order thinking and transferability.

Chapter Five

DISCUSSION

1. Introduction

This chapter aims to critically analyse the findings of the research in relation to contemporary literature understandings with respect to curriculum integration, *Key Competencies*, and enhanced student achievement.

Several themes emerged through the data analysis concerned with getting started, letting go of the achievement objectives, encouraging transferability, the impact on students and working towards a model of curriculum integration for the case study school. These themes can be directly related to the research questions. As the research was looking to establish a model of curriculum integration that was not only unique, but based on the revised curriculum it was to be expected that getting started would be a key theme to emerge. Letting go of the achievement objectives was reflective of the nature of curriculum integration and the nature of the revised New Zealand curriculum. Similarly as the goal of the research was to enhance achievement, the encouraging of transferability and overall impact was central to this study.

The following discussion considers each of these themes separately with respect to the alignment of the findings with the literature and also the contrasts and new insights that can be gained.

2. Getting Started

Curriculum and curriculum design reform have already been outlined in the literature review as requiring significant change if successful implementation is to occur (Drake, 1998; Robertson, 2005). Hayes-Jacob (1991) suggests four phases to effective curriculum integration: concerned with the research and education of staff, making necessary

changes to the school systems and planning for curriculum integration. These were critical components for the case study school in the difficult task of developing a school-based model of curriculum integration. Teacher understanding of curriculum integration and effective pedagogy impacted greatly, as did teacher knowledge of curriculum areas and assessment. Compounding the challenges were various constraints and influences on the school. The next section examines teacher understandings about curriculum integration and the effect this had on 'getting started'.

2.1 Teacher Understandings about Curriculum Integration

At the beginning of this journey, the teachers had various understandings of curriculum integration. Atypically, it was a relatively young staff with a first-time principal, three beginning teachers (one not directly involved in this study as they did not teach *Rich Learning* but still involved due to the nature of curriculum integration) and another staff member with just over twelve years teaching experience. Within that, teachers had their own interests and strengths in education. As a beginning teacher at the start of this project, I was fortunate in that I had a passion for curriculum integration and a range of pedagogical tools.

I accepted the lead teacher role without fully realising the enormity of what needed to be done as Drake (1998) and Robertson (2005) explain about the process of change. Our commitment to being a part of the *EHSAS Graduate Cluster*, and, therefore, working on developing the *Queensland New Basic Rich Task* model had been made. But all of us had limited understanding about the *New Basic* model and had diverse understandings of curriculum integration.

Audet (2005b) and Beane (1997) remind educators that curriculum integration is not easy and Carr et al (2000) suggest teacher resistance is common. In contradiction to this, our staff had become motivated to making this change but still, as Bartlett (2005) and Ellis (2005) discuss, teacher understanding and integrity in knowledge of the curriculum integration design was critical to effective change.

The interviews prior to the unit became an important stepping stone; providing enlightenment on what we needed to do to effect such change. The data showed variability in teacher understanding. Jane, also a beginning teacher at the time, had no experience with curriculum integration. Mike, while an experienced teacher, had very little experience with it and John, as the first-time principal and 0.3 teacher in the senior classroom, had been involved in forms of curriculum integration at other schools, but these were reflective of multi-disciplinary approaches. Jane had the least understanding of curriculum integration and felt her biggest challenge was to try to make everything fit. Both Jane's and Mike's approach was clearly reflective of the multidisciplinary approach described by Drake (1991) and Dowden (2007a). Mike seemed to understand more about why we were developing curriculum integration, seeing the possibilities for student learning. John and I had the most understanding, although within that our own understandings were somewhat contradictory as John described the continuum of integration mentioned by Drake (1991) whereas I conformed more to the notions of curriculum integration proposed by Beane (1997).

The proposal to create our own model of curriculum integration became the impetus for developing greater understanding about the purpose of curriculum integration, the key characteristics, what we needed in our school: key competency development, new curriculum development, greater learning development and enhanced achievement. We compared the *Rich Task* model with our own curriculum and through work with Hanan Harrison, created greater structure about starting curriculum integration and how to develop learning within it. Experimentation with this model began prior to this study and, an initial model for trial had been formed by the time of the research study. However, the speed of which this development was carried out was evident from the data findings around teacher understanding of curriculum integration. As noted numerous times already, time is essential to implementing change (Drake, 1998). Fortunately, our awareness of the importance of reflecting and discussing this regularly meant that even though teacher understanding continued to progress differently, key issues or barriers in understanding were quickly able to be overcome.

One such incident occurred early in the study. Collectively we had agreed on the model for curriculum integration and collaboratively planned for this *Rich Learning* unit converging with Beane's (1997) suggestions to make change more manageable (see appendix 10). Teachers then tailored the planning to meet their individual class needs. This plan was shared before the unit began and immediately demonstrated the confusion over what a *Deeper Understanding* was versus *Deeper Knowledge*. These were terms that we had gained from work with Hanan Harrison and we had embraced these as they provided greater purpose and structure. However, the method we had used lacked rigour: we had constructed them around aspects of the *Key Competencies* but without research or consultation. Loepp (1999) comments lack of rigor is common with change. The lack of rigor highlighted the need for greater clarity over these components of our model and the need for a set of *Deeper Understandings* to form our curriculum. I researched how these were used in other schools, spoke with Hanan Harrison, examined our curriculum and developed fourteen draft understandings. I shared, both process and knowledge understandings with the staff from which, collectively, we formed eight *Deeper Understandings* that incorporated the most important aspects from both the curricula areas and *Key Competencies* in our revised New Zealand curriculum. We revised our planning process and were surprised at how much easier it was to plan for our *Rich Learning* unit. This reflection, evaluation and adaptation provided greater integrity and validity to our model and, as shown in the findings, considerable (variable) growth in teacher understanding.

2.2 Teacher understanding of pedagogy

Teachers involved in this study are fantastically talented, motivated and passionate teachers. Nevertheless, the differing teacher understanding of effective pedagogy, particularly in selection and use of pedagogical tools played its part in getting started in curriculum integration. Curriculum integration itself is a pedagogical approach described by Drake (1998) as often being a radical change from traditional practice. However, when specifically focusing on pedagogy within curriculum integration, Bartlett (2005), Drake (1998) and Erickson (1998) all share various tools that are effective within

teaching and learning in curriculum integration. Strategies such as collaboration and tools such as problem-solving, inquiry learning, Bloom's Taxonomy, De Bono's Thinking Hats, Costa's Habits of the Mind, Gardner's Multiple Intelligences and the Thinker's Keys were used and developed through our *EHSAS Graduate Cluster*. These formed part of our *Productive Pedagogies* component of our curriculum integration model.

Despite experience with these, tools such as inquiry learning and problem-solving approaches evidenced more variable teacher understanding. Jane, particularly, felt that inquiry learning and problem-solving approaches were not applicable to the junior level she was teaching. Mike and Jane were more activity focused in their planning and they struggled over how to use inquiry learning and problem solving methods in their junior classrooms. It required for them, as for many teachers (Drake, 1998), a complete change in mind-set as they were used to having everything planned prior to starting the unit. Inquiry learning and problem solving requires that you only plan so far and then see what happens before you make your next steps. This is not to suggest that the intentions for learning are ambiguous at the start. Bartlett (2005) explains that a means for overcoming resistance to curriculum integration is to ensure that learning focuses are always shared with students, parents and the community and this is a part of our regular practice. Inevitably, with curriculum integration, it means that the learning intentions are reflective of the main learning focus, in this case the *Deeper Understanding*, and specific contextual knowledge may not be determined until student direction occurs.

This, needless to say, focused our teacher development plan on supporting teachers to use these strategies more effectively. Beane (1997) suggests that these tools are at the heart of effective integration. The use of collaborative planning was critical in helping to develop understanding about how to use these pedagogical tools effectively. For John and me, having used these approaches more often, it required us to share our own processes, support others in their planning through a specific planning format and regularly discuss and reflect with them on their progress and next steps. John and I had noted the challenge of how to monitor individual progress previously and ensure adequate assessment (which will be discussed more in section 2.4). We developed the use of learning journeys to do this and helped the others to adapt these to their level to

provide greater support and direction for them as they embarked on using inquiry and problem-solving.

Mike discovered that he could still plan most of the unit, just not all the specific activities, whilst still providing for a high level of problem-solving and inquiry for his students. Mike was then able to work collaboratively with Jane to help her do this in her classroom. This change in teacher understanding of pedagogy is evident in the data findings, especially in the observations of teacher planning and the analysis of their planning documents which showed greater use of a variety of pedagogical tools. This use of tools can be linked to the impact on student achievement and learning that will be discussed below.

2.3 Teacher knowledge of the curriculum

As with teacher understanding in all other areas, teacher knowledge of the curriculum as we prepared for implementing curriculum integration was wide-ranging. The New Zealand revised curriculum was not due for full implementation until 2010 (Hipkins, 2007), but, like many schools, we had already begun our work on developing it.

Many schools had begun to explore the *Key Competencies* and how to implement them in teaching and learning programmes, with some, such as Boyd and Watson (2006) describe, through the use of inquiry-based or curriculum integration based curriculum design. Prior to the start of the unit, we had begun the first step: developing an overview of what each competency entailed. Even then, Jane's understanding was limited as she could not articulate what all of the *Key Competencies* were but she could see the purpose of them; Mike articulated each competency and showed good understanding of the purpose of them but showed little confidence in implementing these outside of *Rich Learning*; John had a good understanding of their purpose and where they fit in learning but was unsure as to how to successfully implement these school-wide. We had developed no clear method, as a school, of how to implement these: whether they would drive the *Rich Learning* curriculum or be embedded within it; or did they have their own separate role in

teaching and learning? It was agreed that *Rich Learning*, our school's model of curriculum integration, would be the first avenue for experimenting with the changes in the curriculum, specifically the *Key Competencies*.

We chose to explore using the *Key Competencies* as the basis for deeper understandings from which to develop our curriculum integration. The Queensland *New Basics* project had used its *New Basics* referents as the basis for learning development in their curriculum integration model (Queensland Government, 2004). The New Zealand *Key Competencies* in the revised curriculum showed strong similarities with these and so we sought to put them at the core of our model of curriculum integration. Despite our varying understandings as we approached planning the unit of learning in this study, we found this a great avenue to further develop our understandings of the *Key Competencies*: skills, knowledge, strategies and habits both within the staff and then later with the students. The use of shared language was something that emerged as critical to developing understanding between staff and students, and provided the foundations for this development. This experience aligned closely with the research described by Beane (1997), Boyd and Watson (2006), and Hipkins (2006).

Conversely, as mentioned previously, while teacher understanding of the *Key Competencies* increased, the rigour with which we used them to base our curriculum was variable. Time, reflection and evaluation noted by Bartlett (2005) were necessary to strengthen collective understandings. Extensive sessions were held with the staff to examine and make connections between the curricula areas and the *Key Competencies* and what we felt was important for our learning community. Such discussions enhanced teacher understandings of the New Zealand revised curriculum, resulting in development of the core deeper understandings, and later, our school's learning dispositions – further integral components to our developed model of curriculum integration.

2.4 Teacher understanding of assessment

As a younger staff, most of us had been trained with the focus on formative assessment, and those who were not, had already worked with formative assessment practices for several years. Teachers showed clarity in determining what types of assessment suited which purpose and used assessment effectively to inform next steps for learning. The *Queensland New Basics* project, as already noted in the literature review, comprised of three components: the *New Basics* referents, *Productive Pedagogies*, and *Rich Tasks* (Queensland Government, 2004) (refer to chapter 2, section 4). Our involvement in the *EHSAS Graduate Cluster* saw us, initially, focused on the *Rich Tasks* and as we grew to understand more about this, we understood that the *Rich Tasks* were actually culminating assessments, designed to allow for effective assessment of both the content and processes developed in a learning unit (Queensland Government, 2004).

The difficulty for us as a staff, was not in understanding the purpose of the culminating rich assessment, but ensuring that it was valid, rigorous and also allowed for adequate formative assessment as learning developed towards it. Both Bartlett (2005) and Drake (1998) discuss how ensuring integrity is a common barrier when implementing curriculum integration. They note that accessing and creating adequate assessment procedures takes time and link the knowledge of the integration programme as integral to ensuring successful assessment procedures. As has been already discussed and will be discussed more fully in the next section, our own understanding of creating effective assessment was impacted by our lack of understanding of curriculum integration. We neglected to ensure the rigor of our *Deeper Understandings* initially and overcrowded our curriculum integration units. The confusion from our first set of planning for the unit in this study led us to make further changes to ensure greater integrity and de-clutter the amount on which we attempted to focus. We found this refinement ensured more precise assessment. The use of the learning journeys enabled effective tracking of learning for formative assessment purposes and, thus, reflected how the necessary time and reflection Drake (1998) described could help to overcome this issue.

2.5 Constraints and Influences on the School

There were numerous constraints and influences. As with any school, we were charged with not only working towards creating a school model of curriculum integration that enveloped the revised curriculum and enhanced student achievement, but we had various constraints of: time, money, professional support, concurrent involvement in two other projects the resignation of both John and Mike during the study and our general classroom commitments. There was also the impact of the impending *National Standards* implementation. Of all the constraints and influences, two aspects will be discussed respectively: the impact of the *EHSAS Graduate Cluster* and the Ministry of Education policies and changes.

2.5.1 The EHSAS Graduate Cluster

Our school became a part of the *Graduate Cluster* in late 2006 as part of the first round of the Ministry of Education's EHSAS projects. There were five schools in total in the cluster, two larger town schools and three smaller rural schools. The goals for this project were twofold: to develop the use of thinking tools, and to develop the use of Queensland *New Basics Rich Tasks* in our schools. These goals provided the impetus for curriculum design change in our school however it should be noted that in the year we began in the cluster, the Queensland State Government chose to end the project and discontinue it (Queensland Government, 2009). We were embarking on using a model that had already been discarded by those who created and trialled it (although some Queensland schools chose to continue with the curriculum design independently – see for example Chevallum School in the Sunshine Coast).

The professional development for the first year of the project, beginning 2007, focused on the development of use of pedagogical tools: Multiple Intelligences, De Bono's Hats, and Bloom's Taxonomy. This was a positive influence in that it enabled teacher of understanding of the use of these tools to be greatly enhanced.

Also scheduled for that year was development of *Rich Tasks*. However, this was fairly superficial and was re-scheduled for further development in 2008 and 2009. Much of the

research necessary for getting started with this had been carried out by the facilitator and manager of the *EHSAS Graduate Cluster* and summarised for us. Ownership of development is a critical aspect of the change process, and, in this sense, we did not own this development (Fullan, 1990). While most of our staff understood that the *Rich Task* was to do with curriculum integration, we were given the understandings without all the benefit of developing them for ourselves from the research and lack of ownership amongst staff as a whole, meant that the motivation to investigate and develop it ourselves was minimal.

Thus, six months prior to beginning this research study, we had been attempting to implement a model of curriculum integration given to us, without having sufficient understanding of what curriculum integration was or why we were doing it. The other components of the Queensland *New Basics* had been neglected and our understandings were constrained as we failed to see how everything fit together. It was not until we carried out our own examination and professional development, in early 2009, that we finally understood what the project was about. We realised that *Rich Task* was just one part of a model for curriculum integration.

It is important to note also that at the time of signing on to the project, that only one staff member involved in this study was employed at the school. Jane and I both joined the school the next year, 2007, as beginning teachers. The principal at the time resigned in term three, right at the point we were supposed to begin development on *Rich Tasks*. The next year, 2008, with a new principal we continued our involvement in the project but as we worked on change in so many areas that year outside of the *EHSAS Graduate Cluster* focus, much of this development took a back seat and our attempts at *Rich Tasks* were poor.

However, positive influences came from emerging collaborative relationships with the other schools in the cluster; renewing passion and commitment to develop our own model of curriculum integration. Dowden (2007a), Drake (1998) and Fullan (1990) discuss how for such change to be effective, support needs to come from several different

levels: from national to local to the community to the school itself. Relationships with the other schools in our cluster helped to provide support at that local level.

In the same year, the *EHSAS Graduate Cluster* also sent representatives from each school to Queensland to visit schools in the *New Basics* project. Discussing the project with those involved with it firsthand provided huge insights: allowing understanding of the potential constraints and barriers as well as benefits of developing curriculum integration in our own school. Surprisingly, in contradiction to Dowden's (2007a) suggestion that effective change must be supported from government, the Queensland State Education, while appearing to support the *New Basics* project, were in the process of revising their own curriculum that was converse to the *New Basics*. Nevertheless, at the end of this project, many Queensland schools chose to continue without government support and simply adapted the revised Queensland curriculum to fit in their *New Basics* curriculum design; suggesting that change may be effective even without government support.

Hanan Harrison's visit later in the year of this research study was invaluable and not only provided critical next steps but also validation of our success. Hanan, an educational consultant based in Queensland, had worked closely with schools in the *New Basics* project; helping to create greater rigour and integrity to the model of curriculum integration. I was fortunate to develop a collaborative working relationship with her and continued to consult her after this period.

Despite this, our *EHSAS Graduate Cluster* came to an end sooner than expected (due to withdrawal of Ministry of Education funding), and despite hopes to continue to collaborate with the other schools, such collaboration has failed to occur. Literature of the change process clearly shows that time and support is necessary for effective and sustained change, and the restriction placed on us with the early ceasing of the project and our own commitments in school, have made it difficult to allocate time for this collaboration and development to continue.

2.5.2 *The Ministry of Education Policies and Changes*

The most significant influence on this study was, first and foremost, the *Extending High Standards Across Schools (EHSAS)* project initiated by the Labour government in 2006. The *Graduate Cluster* was formed within this initiative by another lead school and led to our involvement in the first round of *EHSAS* project clusters. The second significant influence was the implementation of the revised New Zealand curriculum (Ministry of Education, 2007). While New Zealand's official educational documents continue to promote ambiguity in understanding curriculum integration as they have failed to define the differences in different models of curriculum integration and its history, (Dowden, 2007a), the revised curriculum encouraged focus on development of such curriculum designs and personalising the curriculum.

Also significant was the change of government in 2008. The new National-led government reviewed spending and the *EHSAS* projects were forced to close prematurely, with all monies given to be spent by the end of 2009, one year short of our finish date. While the need to make effective use of the remaining budget for 2009 provided the impetus for visits such as those from Hanan Harrison, it also compressed the timeframe so that everything had to be pushed into "high gear". This reflects strongly on the somewhat shaky understanding for some teachers in this study around curriculum integration and our curriculum as opportunities for professional development became more limited.

Further consequences of the change of government saw the debate and pending implementation of national standards as well as numeracy and literacy learning progressions. This focus suggested that efforts in curriculum design change might be negated as it encouraged greater focus on the separate subject approach once more.

3. Letting go of Achievement Objectives

The previous New Zealand curriculum focused heavily on specific achievement objectives in each curriculum area and therefore, a separate subject approach to teaching

and learning as well as more didactic pedagogical approaches. This meant that as teachers and schools organised their curriculum delivery to ensure that they covered each curricula area thoroughly; there was a drive to ensure that over a course of two years at each level of the curriculum, each achievement objective would be covered and teacher practice was such that there was little space for student direction or inquiry learning methods.

3.1 Teacher Understanding of Pedagogy

Making changes to the curriculum and delivery requires substantial planning. Bartlett (2005) suggests that implementing curriculum integration disputes traditional pedagogical approaches and so sufficient teacher understanding of appropriate and effective pedagogy surrounding curriculum integration is critical to successful change. Beane's (1997) integrative approach argues the importance of beginning with the student's own questions about themselves and their world. This approach contrasted with our previous notions of effective pedagogy described in the previous *New Zealand Curriculum Framework (NZCF)* (Ministry of Education, 1991). The *NZCF* demonstrated effective pedagogy through the plan-teach-assess-evaluate cycle however at no point did this suggest consultation with students about what should be taught or did it encourage the use of pedagogical tools such as problem-solving advocated as central to curriculum integration teaching by Bartlett (2005), Drake (1998) and Erickson (1998). Teacher understanding of pedagogy evident in this study impacted on the development of our curriculum and our model of curriculum integration. It has already been discussed that Jane and Mike felt uncomfortable with using tools such as inquiry learning at their junior level of the school and all of us noted discomfort and lack of confidence in not being able to plan everything ahead. To us, it seemed disorganised and ill-prepared to not have a unit of learning with all its key learning activities carefully planned ahead.

As a school we had become used to clearly outlining to students all learning intentions as they had already been determined – the use of inquiry learning and problem-solving as well as providing student choice, independence, collaboration and allowing student ideas to direct learning was converse to our notions of effective pedagogy. How could we set

clear learning intentions and success criteria when we were not sure of exactly what they would be learning? How could you ensure that all children learnt everything intended if they were all focusing on different things? How could junior level children lead inquiry? How could we ensure they were reaching higher order thinking?

These were questions that all of us queried at some point and these converged with many of the questions and concern noted in the literature as other educators embarked on this change in curriculum delivery (Dowden, 2007a).

We were fortunate that all of us believed in the principles of curriculum integration, and had experienced new pedagogical tools in the *EHSAS Graduate Cluster*; such benefits well documented by Bartlett (2005). While Chapter Four showed that teacher understanding of pedagogy was varied to begin with, and developed at different rates, all teachers showed development and increasing use of a variety of pedagogical tools. The most notable exception in development of teacher understanding was in Jane's planning. Jane explained her struggles with stemming the learning from the *Key Competencies* rather than curricula achievement objectives and found it difficult to align her planning so that her learning activities directly linked to learning intentions that linked to the *Significant Questions, Deeper Knowledge* and *Deeper Understanding* of the unit. While Jane was an exception within the staff, this reflected the struggles that have been discussed by Dowden (2007a) and the Freyberg Integrated Studies Project (1989) and the pedagogical practices promoted by the previous curriculum in New Zealand (Ministry of Education, 1991).

The revised New Zealand curriculum actually promotes effective pedagogy through a detailed section in the document which supports methods such as inquiry learning, collaborative learning, student-directed learning and curriculum integration. Change at a national level was well documented by Dowden (2007a) as being central to ensuring effective change from the "top down". In developing understanding of this switch in focus through the revised curriculum, theoretically teachers were able to understand how curriculum integration models would allow for use of these tools and develop more authentic learning for students.

3.2 Teacher Understanding of the Curriculum

The heavy debate and focus from New Zealand educators and education researchers on the *Key Competencies* illustrated the most significant changes to the revised New Zealand curriculum (Carr, 2006; Boyd & Watson, 2006; Hipkins, 2006; 2007). However, there were changes to all areas of the curriculum. The curricula areas had been compacted and the endless achievement objectives were condensed, the pedagogical focus had changed and the curriculum was open to being personalised to meet the diverse needs of different schools (Ministry of Education, 2007).

As we undertook the challenge to reform our curriculum delivery and develop a model of curriculum integration for our school, teacher understanding of the curriculum – especially the focus on achievement objectives – was critical.

Teacher understanding from the previous curriculum and its heavy focus on achievement objectives in each curricula area was contrary to the curriculum organisation necessary for effective curriculum integration. This was typical of many education systems discussed by Dowden (2007a). The revised curriculum changed this but achievement objectives in their separate curricula areas remained. They were not as extensive as before but years of the previous curriculum had encouraged teachers in the case study school to take a separate subject approach in their curriculum delivery, reflective of typical curriculum delivery in New Zealand, Australia, England and the United States (Dowden, 2007a). Jane and Mike's understanding of curriculum integration as a more multidisciplinary approach was due to their existing understanding that curricula areas were taught separately: Reading, Writing, Maths and then the theme. Existing school structures still supported this approach. School curriculum delivery and coverage were separated into delivery plans for each subject area. In the unit of learning in this study, both Mike and Jane had statistics to cover for mathematics and noted that they integrated by making links to the *Rich Learning* unit when they taught mathematics. This reflected Drake's (1998) and Hayes-Jacobs' (1991) definitions of multidisciplinary curriculum integration. In fact, the outline set out for the *EHSAS Graduate Cluster* was to develop the *Rich Tasks* to integrate science, social studies and technology. And yet was this really integration? Or was it just fusing together the "extras"? To achieve true

integration as noted by Beane (1997) and Dowden (2007a; 2007b), it required an overhaul of our whole school curriculum delivery plan – something that some teachers were not ready for as it required letting go of the boundaries of the curricula areas and stringently planned curriculum coverage.

This, of course, is one of the major constraints to curriculum integration that Bartlett (2005), Beane (1992; 1997), Drake (1998) and Miller and Drake (1995) discussed. Such considerable change requires time, teacher understanding and support, and a readiness to change existing school structures. Teacher understanding across the school showed concern about curriculum coverage. This converges with Brophy and Alleman's (2002) criticisms that curriculum integration leads to haphazard curriculum coverage. To teach reading it was expected that it needed intensive focused time, as for mathematics and writing and oral language and so on. As I continued to explain that curriculum integration was about teaching curricula areas that naturally fit within a given idea, issue or understanding a dichotomy was created: Teachers could not abandon their literacy or numeracy programmes but they also felt compelled to integrate as much as possible, whether it naturally fit within the issue or not. This encouraged a multidisciplinary approach to curriculum integration in the school and negated the purpose to gain depth and integrity, which was a concern shared by Beane (1997), Ellis (2005) and Loepp (1999). Teacher understanding made it difficult, as a small school, to even begin to change our existing school structures that Drake (1998) identified as necessary to successfully implement change. Greater confidence and understanding was needed in order for us to make such significant changes to our whole school curriculum delivery and still adequately ensure curriculum coverage. Thus, contrary to our attempts to follow Beane's (1997) integrative approach, we continued to be plagued by the multidisciplinary approach as so many other schools that have attempted curriculum integration have been as they struggled to overcome existing school systems and traditional approaches to covering the curriculum (Drake, 1998).

The *Key Competencies* were yet another factor. Our understandings about these were varied and as they were new to all educators in New Zealand, there were differing ideas about what each competency entailed and how to implement the teaching, learning and assessment of these (Hipkins, 2006; 2007). There was no clear direction set from the

Ministry of Education (Ministry of Education, 2007) so while we knew these needed to be implemented as part of the revised curriculum by 2010, our understandings of the *Key Competencies* were ambiguous. The data findings clearly show that all teachers understood the importance of the *Key Competencies* for learners but the only consistent manner teachers could see teaching these was through *Rich Learning*. While we experimented prior to the study with having a “big idea” or “context” and adding in a key competency to focus on, we had discovered that key competency teaching in this way, was an add-on. Teacher understanding was such that we knew the *Key Competencies* had to be an embedded part of learning and the work of Boyd and Watson (2006) and Hipkins (2006) reinforced this. The decision to base *Rich Learning* (our curriculum integration model) on the *Key Competencies* was unique and we thought this was a valid and rigorous approach to teaching the *Key Competencies* and creating a method for ensuring natural integration in learning. The data findings and discussions show undoubtedly that while this was an important stepping stone, we lacked rigour as we did this due to our lack of understanding about the *Key Competencies*, the *Deeper Understandings* and curriculum integration. Ensuring validity, rigour and integrity was a key concern discussed by Bartlett (2005), Beane (1997), Dowden (2007b), Drake (1998) and Wallace et al (2007) of various attempts in Australia and the United States at curriculum integration.

3.3 Teacher Expectations and Philosophies

Traditional approaches to curriculum have viewed the teacher as the imparter of knowledge (Bartlett, 2005). However, as evident from the literature surrounding the history of education, the notions of constructivism, teachers as facilitators and student-directed learning have been in existence for over one hundred years through the works of Dewey, Piaget and Vygotsky (Audet, 2005a; Bartlett, 2005; Berk, 2002; Loepp, 1999).

Audet (2005b) discussed how challenges to teacher's philosophies and understandings about teaching and learning can be a common barrier to curriculum integration. Nevertheless, the philosophies of teachers at the case study school evidenced through teacher discussion in the data findings demonstrated very constructivist based principles

and all teachers embraced curriculum integration as a means for them to build these more effectively into their teaching and learning programme. The relatively young staff at the school had been educated with the value of constructivist teaching practices, the benefits of student-directed learning and autonomy and the importance of teachers acting as facilitators of learning. Conversely, reality was quite different. Although we used constructivist teaching practices, our preconceived ideas based on our own schooling experiences, the previous New Zealand curriculum and our existing school systems opposed allowing for independent student choice and autonomy in learning. Such challenges have been articulated by many other educators (Beane, 1997; Dowden, 2007a, 2007b; Drake, 1998; Miller & Drake, 1995).

Therefore, expectations of the teachers as we began this journey was that they would develop into teachers with classrooms reflecting the principles they thought integral to successful teaching and learning. Teachers saw this as an opportunity to create meaningful and authentic learning with greater student choice and enhanced learning and achievement, and the data findings after the unit confirmed these expectations, with teachers noting greater enthusiasm and engagement in learning from both themselves and the students. Advocates of curriculum integration, in whatever form, highlight these also showing agreement with the outcomes that we found (Beane, 1997; Wallace et al, 2007).

It would seem with the changes to teacher training, the shift in focus for educational philosophy over recent years and with the addition of the revised curriculum and its greater opportunities to personalise the curriculum, that the time for making these significant changes is ripe as teachers themselves are increasingly aware of their philosophy and openness to changes in their role.

3.4 Teacher Fear

Bartlett (2005), Carr et al (2000) and Drake (1998) suggest that staff resistance is a key barrier to effective implementation of curriculum integration and Audet (2005a) and Beane (1997) both suggested that teachers are often challenged in their beliefs and

knowledge and required to more flexible in the process of changing to curriculum integration. Fear is often at the heart of this resistance: educators are busy enough without being faced with reorganising their classrooms, their classroom programmes, copious amounts of professional development, loss of control over their classroom programmes, creating new resources, challenges to their current teaching methods and challenges to their philosophies on teaching.

Such was evidently the case for teachers at the case study school – particularly, the fear of loss of control over how they delivered the curriculum and organised their timetables and teaching and learning programmes. We were fortunate in that the principles of curriculum integration, reflective of constructivism, aligned with our own philosophies about teaching and learning as well as what we considered to be best practice in the classroom. However, both John and Jane noted concern over loss of control prior to the start of the unit. Jane explained her concerns as relevant to the focus on the *Key Competencies*, suggesting that at the level of her students, it should be more knowledge focused and was worried the learning would be too deep for them. John identified his fears in a bigger picture sense; suggesting that curriculum coverage was the main concern (as previously discussed) and not being able to realise the full potential of depth in the learning. My own fear was in regards to my leadership and how to ensure that all teachers were confident and competent in using the model to effectively integrate the curriculum. These fears, though some proved unnecessary after the study, closely converge with those identified above suggesting that with any major change within a school, teacher fear, in some manner, is to be expected (Fullan, 1990) and Hargreaves and Fink (2006) suggest that teacher emotion is always a key factor in the process of change.

4. Encouraging Transferability

Transferability refers to the idea that concepts learnt in one context may be able to be transferred to other contexts, situations or learning areas. Curriculum integration would appear to offer the necessary foundations for such transferability to occur. It has been

widely argued that the separate subject approach to learning, so common in so many school systems throughout the world, teaches concepts in isolation and neither makes learning relevant to students or allows them to make important cognitive connections in their learning (Beane, 1997; Dowden, 2007a; Drake, 1998; Hayes-Jacobs, 1991).

Curriculum integration, especially in the integrative definition of Beane (1997), breaks down the artificial barriers between learning areas and provides opportunities for learning to occur more authentically, relating and connecting to all contexts or situations that are relevant. With a big idea or, in the case of the case study school's model for curriculum integration, deeper understanding is developed irrespective of specific subject areas and encompasses all those concepts which naturally fit within the focus of learning. This was key to our purpose as we sought to create a new and relevant curriculum through this design, however, issues surrounding the dangers of over-packing, the shift in teacher/student control and the process of change emerged.

4.1 Danger of Over-packing

Though briefly discussed previously, the danger of over-packing the unit of learning was a considerable hurdle for us to overcome. The adaptations made to the model and the planning even prior to beginning the unit were the first sign that over-packing might be a concern. As noted above, the goal was to create greater transferability as we recognised the benefits to student learning and achievement that this would have. Nevertheless, previous approaches to planning and understanding of effective pedagogy, and the nature of the previous curriculum meant that curriculum integration and therefore, creating transferability in learning was a challenge.

The nature of the previous curriculum with its extensive achievement objectives focused educators on ensuring curriculum coverage (Ministry of Education, 1991). And with the revised curriculum and change to curriculum design, the fear of not covering the curriculum remained, as explained previously. The effect of this was evident as staff discussed planning for this unit. John, Mike and Jane all questioned the extent of coverage and the links that could be made. John, in his role as principal, was faced with balancing the dichotomy of wanting to ensure that we developed the model correctly,

and therefore only made connections to what naturally fit in learning; with wanting to ensure that we were monitoring and covering the curriculum. Jane, already described as a teacher that was typically activity focused as she had lots of fantastic and motivating learning ideas, kept adding links to be included in the unit. For example, she suggested that they were doing statistics so maybe they could make graphs of things as they worked on mysteries; and the movie "Where the Wild Things Are" had just come out and she thought that was a fantastic story and could be used somehow... perhaps if they wrote their own mystery stories. Mike, similarly, but with a strong interest in science, suggested links could be made to the mysteries of astronomy, nature, history, crime, and much more. The unit of learning was scheduled for ten weeks only... and we were aiming for depth in learning but all of this felt more like a marathon! It was a struggle to keep us all focused on the real purpose of learning and to encourage links to be natural, explained as necessary by Beane (1997), Ellis (2005), Loepp (1999) and Miller and Drake (1998).

Despite this, the refining of the model and *Deeper Understandings* – effectively the creation of our *Rich Learning* curriculum, helped to refine the focus for learning development. Instead of focusing on mysteries as a theme, the emphasis was on using it as the initial avenue for investigating problem-solving and critical thinking. Once this was clarified, teachers began to see how they could focus on particular mysteries or aspects of mysteries to interest and motivate children and provide the platform for developing the learning processes needed, and then open it up for student direction.

4.2 Shifts in Teacher and Student Control

Providing for student direction was critical to enabling true transference of learning. Students needed to be provided with opportunities to apply and develop their learning through the whole class context of mysteries to their own focus so that transferability and therefore, depth of understanding could be recognised (Beane, 1997). But, as mentioned in a prior section, both Jane and Mike felt that inquiry or problem-solving independently or in small groups was too difficult for their students. This provided a potential barrier

to encouraging transferability as it took away the option for student direction of learning and for independent (whether individually or in collaborative groups) inquiry and problem-solving. To ensure that students were to have these opportunities, we had to develop a planning format that would encourage adequate modelling and experiences with inquiry and problem-solving methods. Thus, it would encourage a greater shift from teacher control of learning to share the direction more collaboratively with the students.

However, further to this and relevant to curriculum coverage was loss of teacher control of exactly what students would learn. All of us expressed concerns, initially, about the idea that if students chose their own focus, they would be learning different things. Jane worried that then she would not be able to make sure they all achieved the learning intentions she had set for them. We were neglecting that the focus for learning was not on specific contextual knowledge, but on problem-solving and thinking critically, which should be developed through any context they chose. It was a matter of us relinquishing some control of learning in that, students, once having whole class modelled learning experiences would then choose their own direction to which to further develop this learning. Inevitably, the shift in control was successful and both teachers and students demonstrated the positive change in their learning relationships that Beane (1997) had identified as a benefit of curriculum integration.

This student direction and independence was relevant not only to transferability but to authenticity of learning, student engagement and development of autonomous learners, which will be discussed more fully in section 5.

5. Impact on Students

So far the major part of the discussion has centred on teacher understanding and the impact noted on teachers through this study. Recalling the goals of this thesis, a significant focus was on raising student achievement. The impact of changing curriculum design on students was evident through two different areas: student achievement and student learning.

5.1 Student Achievement

Through the findings of both the observational data and post-interview data, changes to student achievement were evident. All teachers commented on greater depth of understanding in their students, with John, as principal, recognising increased achievement across the school. This was substantiated by the researcher observations of students and the interviews with them after the unit of learning. The group of interviewed students from each class represented the range of learning levels in the classroom: from low to high and yet all students showed high achievement within their levels.

The observational matrix developed in conjunction with other schools in the *EHSAS Graduate Cluster* was used to observe the students within the first two weeks of beginning the unit of learning and then again at the seven-eight week point of the unit of learning, near the end of the unit (*refer to appendix 9*). Within this time, significant improvement in understanding was noted for all students. Post-interviews were conducted two weeks after the unit of learning had finished for most students and students articulation of what they were learning, as well as the process of their learning and why they were learning reflected a high level of understanding for the level they were working at.

Beane (1992; 1997) notes many benefits of curriculum integration, one being the enhancement of student achievement, especially as it develops higher order thinking and encourages greater application of learning and the findings of this study strongly converge with these. Personally, I had been dubious about the extent that student achievement would raise as I suspected that the significant changes to curriculum design and use of pedagogical tools might take time for students to become confident with and thus, significant raising of student achievement might occur more slowly over their experiences through several units of learning designed in this manner. The results contradict my initial doubts and while our model does not reflect true integration in Beane's (1997) definition, the benefits to student achievement reflect those identified by Bartlett (2005), Beane (1997) and Wallace et al (2007). In fact, Terry (2008) and William and Reisberg (2003) noted the benefits of curriculum integration for the achievement of

both low-ability and gifted students, and while none of the students in the study have been identified as gifted, there was a range of low to high ability students and all of these students showed high levels of understanding suggesting the benefits of curriculum integration. This is significant as it validates the purpose of this study, clearly suggesting, despite the need for further development of our model of curriculum integration and systems in the school, that curriculum integration is a worthwhile and valuable approach to curriculum organisation and design.

5.2 Student Learning

The impact of curriculum integration on student learning saw three key aspects of student learning became obvious through the data findings: the levels of engagement, transferability, and increased higher order thinking.

5.2.1 Engagement

Wallace et al (2007) evidenced increased student engagement as a benefit of curriculum integration. In accordance with this, engagement from start to finish of the unit of learning was observed to be high. Even with senior students, many of whom at this stage were preparing for high school, engagement was high. Through discussions with the students and their teachers, and observations, students were noted to be motivated, responsible for their learning, active participants and confident to take risks, seek help and persist in tasks and solving problems.

Ellis (2005) advocates implementation of curriculum integration as it offers students opportunities for real-world, authentic learning opportunities for students. In this unit of learning, while we began with some teacher initiated motivating activities, the direction of learning quickly became linked to students' own ideas and questions that they wished to find out more about or solve, providing the authentic opportunities Ellis (2005) described and also offering students choice in their learning. This inevitably led to the high levels of engagement that was manifest through our model of curriculum integration.

5.2.2 *Transferability*

Transferability of learning demonstrates greater understanding of concepts for students as to be able to use something or adapt something they have learnt in a different context, shows a high level of understanding about how a concept works, its purpose and all the components of it. If students are able to transfer ideas in their learning, they are using higher order thinking and developing high order understanding. Curriculum integration is described by all its advocates as providing the authentic forum to create real-life learning where ideas or concepts can easily be transferred to other concepts as students make links and connections to real situations in life. This unit of learning focused on developing problem-solving and thinking critically, two concepts that are needed throughout many facets of our lives. While we used the context of mysteries to begin the learning, this was in contrast to a thematic unit which may be on mysteries and therefore students only learn to problem-solve and think critically about mysteries, with little opportunities to make connections between mysteries and problems and the applications of problem-solving and thinking critically to other areas of life. Due to this basis on not a theme or context, but key *Deeper Understandings*, teachers were able to plan for, and demonstrate through teaching, consistently transferrable ideas and help students to make connections between these.

Further, students were often observed to make these connections themselves, frequently seeking to make these themselves and substantiated these observations through their post-interview discussions where most students in the study could articulate ways in which their learning transferred to other areas and many students demonstrated these through their own independent problem-solving as they identified and worked to solve problems of their own interest (or making) and used their learning through this process. Closely linked to levels of engagement, students, in most cases, were able to see the authenticity of their learning. This reflected one of the key purposes for the change in our school's curriculum design and showed agreement with purposes and benefits noted by much of the literature surrounding curriculum integration (Bartlett, 2005; Beane, 1997; Dowden, 2007a; Drake, 1998; Ellis, 2005; Erickson, 1998; Wallace et al, 2007).

5.2.3 Higher Order Thinking

Beane (1997) supports curriculum integration strongly due to its benefits to student learning and achievement, identifying higher order thinking as a key cause for this. As already noted, student achievement was high in this unit of learning and this is a direct effect of the level of higher order thinking that students engaged in during their learning. The expectation of all students to engage in inquiry and problem-solving processes in their learning meant students were also expected to, and supported in, developing higher order thinking in their learning. Independent of our focus on problem-solving in this unit is that the model of curriculum integration that we have developed has the use of such productive pedagogical tools as a core component. The planning format within the model is designed as such that inquiry or problem-solving is a part of every unit of learning, whether independently or collaboratively in groups or whole class situations.

Higher order thinking development was evident for all students observed and many students could articulate the extent of their higher order thinking as they described their processes of learning as well as their own self-assessment. Teachers validated this finding, expressing their own observations as they noticed students demonstrating greater depth of thinking in their learning. In the youngest junior class, one participant was able to depict his learning process clearly and also depict his disappointment as he realised that he would not be able to solve his problem, though he still felt confident that he had been successful in his learning. This demonstrated the depth of thinking that a Year Two student is able to engage in: showing reflective, critical and metacognitive elements of thinking. This clearly supports Bartlett's (2005) and Beane's (1997) suggestions that curriculum integration provides extensive opportunities for students to develop higher order thinking.

6. Towards a Curriculum Integration Model

The goal was to create an effective model of curriculum integration design for our school that encompassed and developed the revised New Zealand curriculum and enhanced

student achievement. The Queensland *New Basics* model provided the foundation for development of this through our involvement in the *EHSAS Graduate Cluster*.

Through an extensive process of change entailing professional development, research, exploration, trialling, shared discussion and reflection we have developed a model of curriculum integration for our school that we feel meets our goal.

6.1 The Model: *Rich Learning*

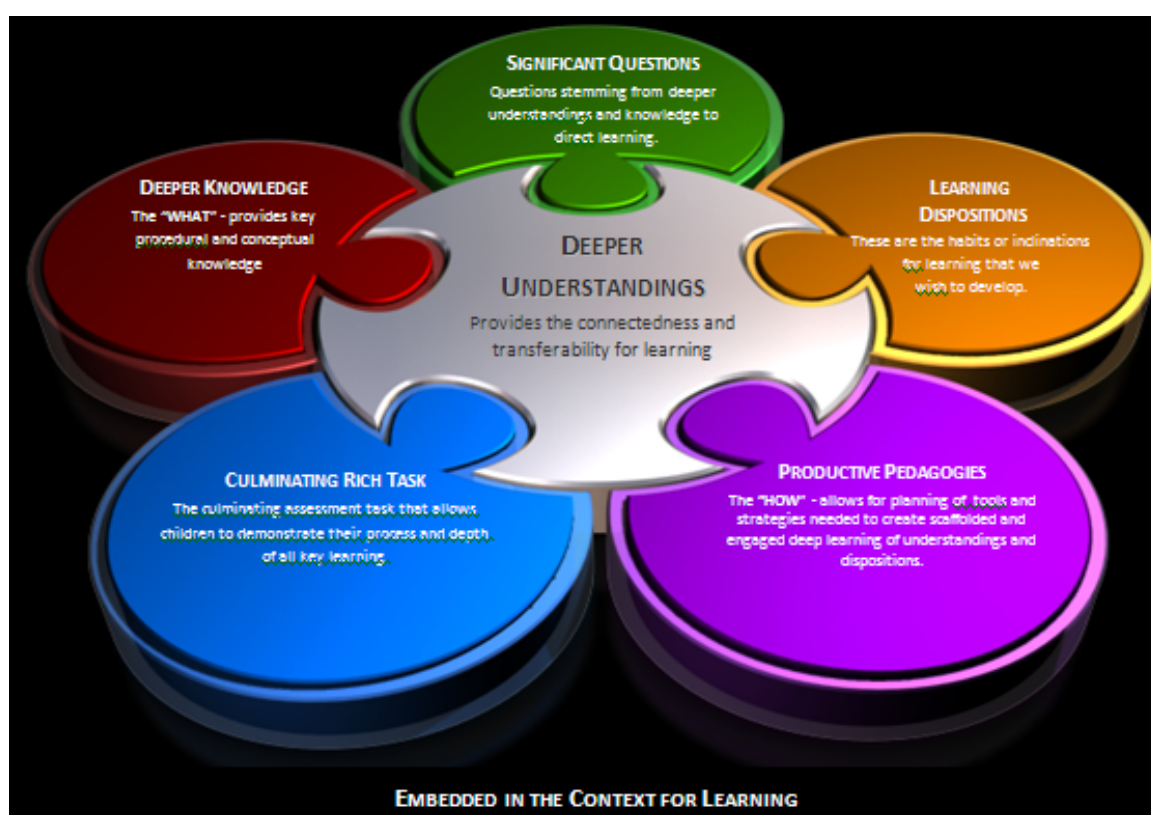


Figure 5.1 - *Rich Learning* Model - Ana Matangi-Hulls: 9 December 2009

This graphic depicts the essential components and the links between them for *Rich Learning*. The *Deeper Understandings*, of which there are eight, are at the centre of learning development and this is supported through the surrounding components. This is similar to the notions of Beane's (1997) integrative approach, which bases integration of knowledge, experiences, curriculum design and social connections through a curriculum of big ideas, reflecting the significant converging questions from children about themselves and their world. While our *Deeper Understandings* are not directly constructed

from student's own questions, they reflect the big understandings and purpose in life's learning.

6.1.1 *Deeper Understandings*

These are the “why” in learning. As a school we looked at different aspects of the *Key Competencies* and the curriculum and asked ourselves “Why – Why do we want children to learn this?” The revised curriculum allowed us to more fully examine the purpose for learning in the curricula areas and make connections between these purposes and the purpose for learning of *Key Competencies*. These *Deeper Understandings* articulated the purpose for learning and created explicit platforms for creating transferability and connectedness in learning. Effectively, these are the basis of our curriculum in *Rich Learning*.

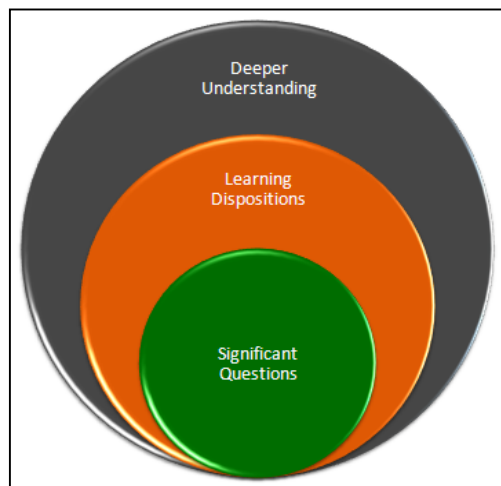


Figure 5.2: Deeper Understandings

The eight *Deeper Understandings* are shared below:

1. Effective communication helps us participate successfully in our world.
2. Patterns and relationships help us make sense of the world around us.
3. We are responsible for our well-being and can influence other's well-being.
4. Making connections with people around us helps us understand our world.
5. The past helps us understand who we are, where we are and possibilities for the future.
6. Understanding ourselves and others helps us to effectively participate, celebrate, and contribute to our world.
7. We need to acknowledge the different attitudes, values, cultures and societies that people have.
8. Our relationship with the environment affects our contribution to our world.

The *Deeper Understandings* were unpacked as a staff and collaboratively developed so that clear links could be made to the other components. I then created figures for each *Deeper Understanding* to be included in the *Rich Learning* overview (to be discussed in section 6.3) and on our school online learning management system (see appendix 11).

In the organisation of the model prior to beginning of the unit of learning in this study, the *Deeper Knowledge* followed on from the *Deeper Understanding*. However, with the confusion over these terms, and the adaptations we made to create more clarity, we reviewed how these were linked so that the *Deeper Understanding* was at the base and was then unpacked by the learning dispositions.

6.1.2 Learning Dispositions

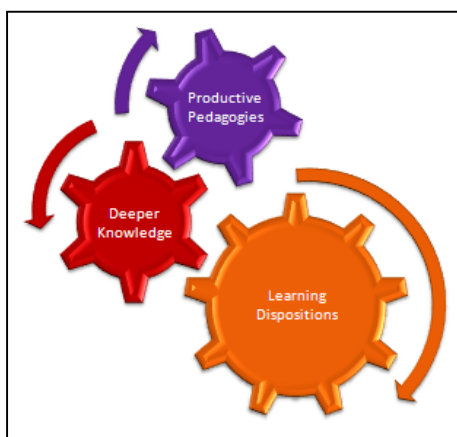


Figure 5.3 – Learning Dispositions

Learning dispositions, simply, are the good habits needed to creating effective lifelong learners. The development of the case study school's learning dispositions occurred during the unit of learning in this study. This was as a direct result of consultation with educational consultant, Hanan Harrison, who worked closely with the *EHSAS Graduate Cluster*.

These were the missing element. With all the development we had done on our *Rich Learning* model, we had structured a curriculum integration

design that had a curriculum, an assessment procedure, and effective pedagogical practise being developed. We did not have the end result: what our students would be like when they moved on from our school. Learning dispositions would help us identify this and also provide an important support for key competency development (Claxton & Carr, 2004).

Examples of learning dispositions have been defined by both Claxton (2006) and Costa and Kannick (2009), notably Costa's Habits of Mind are one of the most widely known sets of learning dispositions. We researched and examined these as well as examples of these and key competency work from other schools, comparing them with what we had developed for the *Key Competencies*, and then created our own set of thirteen learning dispositions, listed below.

- Persevere
- Manage distractions and their reactions
- Be engaged
- Take notice
- Make meaning
- Think critically
- Think creatively
- Think reflectively
- Be interdependent
- Collaborate
- Be empathetic
- Actively Communicate
- Emulate

6.1.3 Significant Questions

Erickson (1998) suggested that one of the integral pedagogical tools in curriculum integration is the use of significant questions. This component, therefore, provides the guiding questions for activating prior knowledge and guiding inquiry into learning around the *Deeper Understanding* and learning dispositions. In the model previous to this unit of learning, these had been developed from the *Deeper Knowledge* but this was reviewed during the study.

6.1.4 Context

These are the “where” in learning. Contexts are the situations or perspectives in which learning will take place. They provide the focus for how the *Deeper Understandings* and learning dispositions will be unpacked and what *Deeper Knowledge* is to be learnt. Contexts can be just about anything, as long as it is relevant to the *Deeper Understanding* for learning, but they are an integral component as the context is often what provides children with the engagement and authenticity in their learning. Contexts offer the opportunity to provide real-life situations for children to learn so that they can see the relevancy of what they are learning; one of the significant benefits noted by Beane (1997) and Wallace et al (2007). Having varied contexts also provides children with greater opportunity to see how they can transfer their learning from one situation to another, which leads to greater understanding (Beane, 1997; Drake, 1998).

6.1.5 *Deeper Knowledge*

These are part of the “What” in learning. This is the deep procedural and contextual knowledge that we intend the children to learn through the unit. As a school, we identified that there is cross-curricula deep knowledge, such as problem-solving, and there is specific curricula deep knowledge, such as the use of algorithms in mathematics. As Beane (1997) argues, knowledge is often not limited to one curricula area and therefore it is inauthentic to teach it as such. This component recognises that knowledge is not restricted by subject boundaries while still respecting the disciplines of knowledge.

6.1.6 *Productive Pedagogies*

Simply put, this was directly developed from the Queensland *New Basics* model but to fit the needs of our school. It encouraged us to think carefully about using a wide range of pedagogical strategies and tools to help meet all students’ learning needs and for greater variety and opportunities to develop learning. Bartlett (2005), Drake (1998) and Ellis (2005) all discuss the range of pedagogical tools necessary in curriculum integration and we have included these in our extensive productive pedagogy toolbox, including inquiry learning, problem solving, Bloom’s Taxonomy, Multiple Intelligences, De Bono’s Hats, the Thinker’s Keys and many more.

6.1.7 *Culminating Rich Tasks*

This component acts as the overriding assessment piece as it aims to incorporate the majority of children’s learning in developing it. It could be a product, model or performance and it provides the means for assessment not only in the summative piece at the end of the task but also in formative assessment as students work through the task. Thus, culminating rich tasks should be designed so that the *Deeper understanding*, learning dispositions and *Deeper Knowledge* focused on in the unit can be effectively used and presented. Authentic and valid assessment is central to ensuring the integrity of curriculum integration and this component of the model ensures assessment is valid and precise (Brophy & Alleman, 2002).

6.2 Planning a Unit of Learning

As noted in the data findings and earlier sections of this discussion, our initial model as we begun this unit of learning was ambiguous. Through regular staff discussion, it was not clear how all the components linked together, our *Deeper Understandings* lacked rigor and were confused with *Deeper Knowledge*. This led to our subsequent adaptation to our model, reflective of the process outlined by Drake (1998) as key to overcoming barriers in curriculum integration (see Figure 5.4, page 120).

This model displayed the process for planning the unit and showed the connections between each component. The development of learning was scaffolded and provided for appropriate emphasis on each component; creating greater structure and integrity to the model.

To further support planning, a planning template was designed for staff to use (see appendix 12). This was an important development. As noted previously, teacher understanding of curriculum integration and pedagogy, specifically inquiry learning and problem-solving was varied and a planning template helped create sufficient scaffolding for all teachers as they tailored our collaborative planning to meet their individual class needs. It set the expectation for such tools to be used and placed emphasis on making links between the focus for learning and the most useful pedagogies to use for learning development. It also provided natural alignment for assessment and followed the learning journey template we had created to further support inquiry and problem-solving processes and the development towards assessment (see appendix 13). The planning template also separated learning development into sections providing benchmarks for learning development as well as staff discussion and reflections, as well as platforms for student choice and direction. Beane (1997) is the strongest advocate for the use of student direction in curriculum integration and while our model does not base learning on student's questions initially, it offers these opportunities as various points throughout the learning.

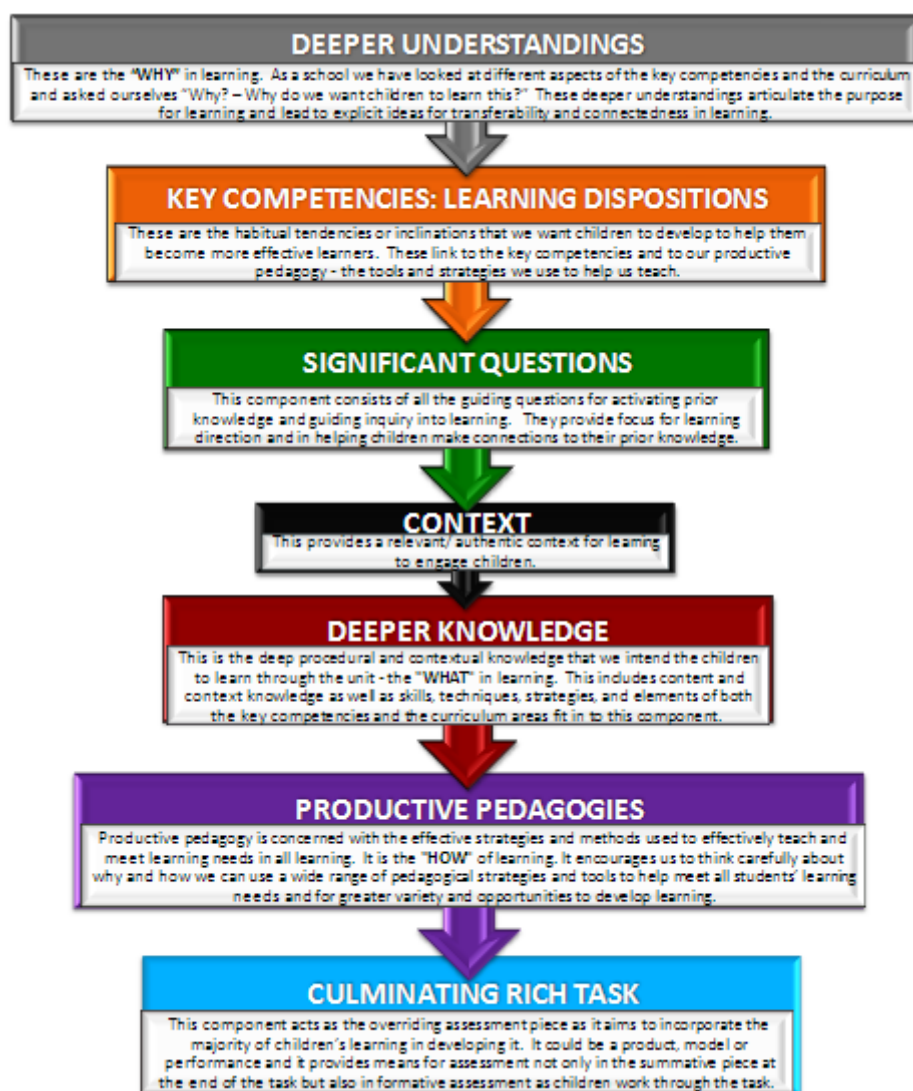


Figure 5.4 - *Rich Learning Planning Model Overview* – Ana Matangi-Hulls: 9
December 2009

6.3 Supporting Resourcing

Bartlett (2005) and Drake (1998) discuss the need for adequate resourcing and how without it, barriers can occur. Suffice to say, that the key resourcing we identified was needed was: a long term plan, a *Rich Learning* model overview and shared development of the learning dispositions between teachers and students.

6.3.1 *Long Term Plans*

The long term plan was to help provide greater rigour to the model and how it was delivered (see appendix 14). The eight *Deeper Understandings* were set and, realistically, one was to be covered in each unit of learning so that the eight could be covered over a two year period. It was also noted that it was too difficult to focus on all learning dispositions in one unit. While the learning dispositions were relevant to all learning, not just *Rich Learning*, in trying to focus on all of them at once, the noted benefit of compacting the curriculum shared in chapter 2 was contradicted as the learning focus became over-packed as we tried to include all learning dispositions (Ellis, 2005).

Therefore, these were planned for also, so that each one received extra emphasis over the two year period. Contexts were also linked to each learning unit so that specific curricula coverage could be attained and regular extracurricular events such as science fair and cultural celebrations could be linked naturally to learning to encourage more purpose to these. This long term plan, while open to adaptation, reflects the extent to which our model has been developed: a working, rigorous and sustainable model of curriculum integration.

6.3.2 *Rich Learning Overview*

A further critical factor to the change process is setting change so that it is sustainable. Too often such monumental change is made and then allowed to fall by the wayside due to changes to: resourcing, time, professional development, staffing and school structure and management (Drake, 1998; Fullan, 1990; Hargreaves & Fink, 2006). It was important to create an overview for new and existing staff that clearly explained the model, its purpose and its development with links to all the resources and templates used.

6.3.3 *Shared Development of Learning Dispositions*

While these were not directly used in the unit of learning in this study, these were developed as a result of this study as an integral component of the *Rich Learning* model. To become a workable component in the model, shared development of these was necessary. Beane (1997) and Wallace et al (2007) note the importance of negotiation in the curriculum and the data findings highlighted the importance of shared language and development with students as well. The links between *Key Competencies* was made for

teachers and teachers then began creating a list of keywords for shared language and key knowledge and pedagogies to help unpack these in teaching and learning. An example can be found in appendix 15.

7. Conclusions of the Study

The data findings suggest that, while our model is still in early development, student achievement has been enhanced and we have developed a curriculum design for implementing the revised curriculum. The research questions have provided the focus for the study and to this end can now effectively be answered.

The first question was looking to understand what curriculum integration is .

Curriculum integration is a method of curriculum design that, in its truest form, is based on an issue stemming from children's own questions about themselves and their worlds and which scaffolds learning through problem solving and inquiry learning approaches, transcending traditional curricula areas and integrating them naturally within authentic contexts of learning. Yet, while it sounds simple, it is difficult to implement as constraints of effective teacher understanding and traditional separate subject approaches need to be developed and overcome first.

Further questions guiding the researcher were:

- What are the New Zealand *Key Competencies*?
- How do the Queensland *New Basics & Rich Task* models enable a basis for curriculum integration that includes the *Key Competencies* in New Zealand?
- How can curriculum integration be used to develop the *Key Competencies*?

The *Key Competencies* are an important component of New Zealand's revised curriculum and essential foundations to life-long learning and effective participation in our world. New Zealand's revised curriculum provides the perfect opportunity for developing curriculum integration design as it allows schools to tailor the curriculum to meet their needs and provides flexibility in its implementation as well as in transference of learning.

Coinciding with this, the Queensland *New Basics* project provided a firm stepping stone in developing a model of curriculum integration that effectively enhanced both student achievement and learning.

Finally, the last sub-question asked how, collectively, curriculum integration and the *Key Competencies* could be used to enhance student achievement. The research has shown that through the development of *Te Tuara School's Rich Learning* model of curriculum integration and a curriculum based on the *Key Competencies*, student achievement and learning can be greatly enhanced: leading to deeper understanding, high engagement, and greater development of higher order thinking and transferability of learning.

However, there are still limitations evident from the study. Teacher understanding is critical to effective curriculum integration design and such understanding requires extensive professional development and support over time, time that was not available through the course of this study. A further limitation can be seen as whether this change can be sustained and continue to develop over time, with teacher understanding still developing and no opportunity within this study to monitor the sustainability. Certainly, ensuring the validity of the school's developed curriculum is also a limitation as it is yet to be consolidated. Finally, while student achievement was enhanced in this study, it has yet to be evidenced over the long term course of sustained *Rich Learning*.

Due to this, there are several recommendations for future study. The first: to carry out case studies using the model in other schools to ascertain the validity and worth of the model. The second recommendation is to carry out case studies for longer periods of time that allow teachers to create their own curriculum: *Deeper Understandings* and learning dispositions and make adaptations to the model to meet their school's needs so that the sustainability of change and extensive review of the model can be investigated. The final recommendation would be to study the process with which the culminating rich assessments are developed, worked towards and monitored through the use of such tools as learning journeys so that teacher pedagogy, specifically through formative assessment, within the model continues to be refined.

REFERENCES

- Adkins, B., Grant, E., Summerville, J., Barnett, K., & Buys, L. (2003). *Community and Learning for the New Economy*. Queensland: Centre for Social Change Research, Queensland University of Technology - Paper presented to the Social Change in the 21st Century Conference.
- Arnold, R. & Ryan, M. (2003). *The Transformative Capacity of New Learning*. Victoria, Australia: Australian Council of Deans of Education.
- Audet, R.H. (2005a). Curriculum Integration: Capitalising on Student Inquiry. In Audet, R.H., & Jordan, L.K. (Eds.) *Integrating inquiry across the curriculum* (pp. 137-153). Thousand Oaks, California: Corwin Press.
- Audet, R.H. (2005b). Inquiry: A Continuum of Ideas, Issues, and Practices. In Audet, R.H., & Jordan, L.K. (Eds.) *Integrating inquiry across the curriculum* (pp.5-15). Thousand Oaks, California: Corwin Press.
- Bartlett, J. (2005). *Developing Independent Learners: The planning and implementation of an inquiry-based curriculum integration program at Kuranui College*. Wellington: NZCER – Printlink.
- Bassey, M. (1999). *Case Study Research in Educational Settings*. Buckingham: Open University Press.
- Beane, J. (October 1991). The Middle School: Natural Home for Curriculum Integration. *Educational Leadership* (Vol.49, No.2). pp.9-13.
- Beane, J. (1992). Integrated Curriculum in the Middle School. *ERIC Digest* (ED351095). Illinois, USA: ERIC Clearinghouse on Elementary and Early Childhood Education, University of Illinois
Accessed at: <http://ericece.org>

- Beane, J.A. (1997). *Curriculum integration: designing the core of democratic education*. New York: Teachers College Press.
- Beane, J.A. (2005). *A reason to teach: Creating classrooms of dignity and hope: the power of the democratic way*. Portsmouth: Heinemann
- Berg, B.L. (2004). *Qualitative Research Methods for the Social Sciences (5th ed.)*. San Francisco: Pearson Education, Inc.
- Berk, L.E. (2002). *Infants, Children, and Adolescents (4th ed.)*. Boston: Allyn & Bacon.
- Bogdan, R. & Biklen, S. (1998). Data analysis. *Qualitative research for education: An introduction to theory and practice*. Needham Heights: Allyn & Bacon, pp. 157-186.
- Bogdan, R.C. & Biklen, S.K. (2003). *Qualitative Research for Education: An Introduction to Theories and Methods (4th ed.)*. Boston: Pearson Education, Inc.
- Boni, A. & Lozano, J.F. (2007). The generic competences: an opportunity for ethical learning in the European convergence in higher education. *High Educ* 54 (pp.819–831).
Received: 24 January 2005 / Accepted: 10 July 2006 / Published online: 1 August 2006 _ Springer Science+Business Media B.V. 2006
- Boyd, S. & Watson, V. (December 2006). *Shifting the frame: Exploring integration of the Key Competencies at Six Normal Schools*. Wellington: NZCER.
- Brandt, R. (October 1991). On Interdisciplinary Curriculum: A Conversation with Heidi Hayes Jacobs. *Educational Leadership (Vol 49, No.2)* pp.24-26).
- Brink, S. (2003). Policy Research in Support of the Skills Agenda of the Government of Canada. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo*

Symposium. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13
February, 2002. (pp.21-24)

Brophy, J. & Alleman, J. (October 2001). A caveat: Curriculum Integration Isn't Always a
Good Idea. *Educational Leadership* (Vol 49, No.2) p66.

Carr, M. (2006). *Dimensions of strength for key competencies.* New Zealand: TKI, Ministry
of Education.

Accessed at:

http://www.tki.org.nz/r/nzcurriculum/draftcurriculum/key_competencies_e.php

Carr, M., McGee, C., Jones, A., McKinley, E., Bell, B., Barr, H., & Simpson, T. (2000).
*Strategic Research Initiative: Literature Review. The Effects of Curricula and
Assessment on Pedagogical Approaches and on Educational Outcomes.* Waikato:
The University of Waikato and Ministry of Education.

Clark, J. (1997). *Educational Research: Philosophy, Politics, Ethics.* Palmerston North: ERDC
Press, Massey University.

Claxton, G. (December 2006). *Expanding the capacity to learn: A new end for education?*
Keynote Address: British Educational Research Association Annual
Conference, Warwick University.

Accessed at:

http://www.s7colleges.com/learninginnovation/_pdf/BERA%20Keynote%20Final.pdf

Accessed on: 15 July 2010

Claxton, G. & Carr, M. (March 2004). A framework for teaching learning: the dynamics
of disposition. *Early Years* (Vol. 24, No. 1).

Codd, J. (May 2005). Teachers as 'managed professionals' in the global education
industry: the New Zealand experience. *Educational Review* (Vol. 57, No.2).

Costa, A.L. & Kannich, B. (2009). *Describing 16 Habits of Mind*. Institute For Habits of Mind.

Accessed at: <http://www.instituteforhabitsofmind.com/what-are-habits-mind>

Accessed on: 15 July 2010.

Creswell, J.W. (1998). *Qualitative Inquiry and Research Design*. Thousand Oaks, California: Sage Publications Ltd.

Dowden, R.A. (2007a). *Curriculum integration for early adolescent schooling in Aotearoa New Zealand: Worthy of serious trial*. Palmerston North, NZ: Massey University Doctoral Thesis.

Dowden, T. (2007b). Relevant, Challenging, Integrative and Exploratory Curriculum Design: Perspectives From Theory and Practice for Middle Level Schooling in Australia. *The Australian Educational Researcher* (Vol 34, No. 2).

Drake, S.M. (1998). *Creating Integrated Curriculum: Proven Ways to Increase Student Learning*. Thousand Oaks, California: Corwin Press.

Ellis, A.K. (2005). *Research on Educational Innovations (4th ed.)*. New York: Eye on Education.

Erickson, H. L. (1998). *Concept-based curriculum and instruction: Teaching Beyond the Facts*. Thousand Oaks, California: Corwin Press, Inc.

Freyberg Integrated Studies Project (1989). *"Getting it Together" Explorations in Curriculum Integration, Out of Class Activities and Computer Applications*. Palmerston North: Central Office of Department of Education New Zealand, Massey University and IBM.

- Fullan, M. (1990). Staff development, innovation and institutional development. In B. Joyce (Ed.). *Changing school culture through staff development*. (pp.3-25). Alexandria, VA: Association for Supervision and Curriculum Development.
- Gibb, J. & Curtin, P. (2004). Overview. In J. Gibb (Ed.). *Generic skills in vocational education and training: Research Readings*. Adelaide: National Centre for Vocational Education Research Ltd.
- Gillham, B. (2000). *Case Study Research Methods*. London: Continuum.
- Gilomen, H. (2003a). Foreword. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002.
- Gilomen, H. (2003b). Introduction. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. pp. 7-13.
- Gilomen, H. (2003c). Conclusions and Next Steps. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. pp.201-207.
- Gonczi, A. (2003). Teaching and Learning of the Key Competencies. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. (p.119-132)
- Harrison, H. (2009). Personal communication: EHSAS Wykehamist Cluster Queensland Conference 2009.
- Hargreaves, A., & Fink, D. (2006). *Sustainable Leadership*. San Francisco: Jossey-Bass.

- Hattam, R. & Smyth, J. (2001). Competing logics in the key competencies: a sociological reading of post-compulsory education and training in Australia. In Flinders Institute for the Study of Teaching (Eds.). *Occasional Paper No. 14*. Adelaide: Flinders University.
- Hayes Jacobs, H. (October 1991). Planning for Curriculum Integration. *Educational Leadership* (Vol.49, No.2) pp.27-28.
- Hinde, E.R. (2005). Revisiting Curriculum Integration: A Fresh Look at an Old Idea. *The Social Studies* (May/June 2005).
- Hipkins, R. (2006). *The Nature of the Key Competencies: A Background Paper*. Wellington: NZCER.
- Hipkins, R. (2007). *Assessing Key Competencies: Why Would We? How Could We?* Wellington, NZ: Ministry of Education – Learning Media Limited.
- Jordan, A., Carlile, O., & Stack, A. (2009). *Approaches to Learning: A guide for teachers*. Berkshire, England: Open University Press.
- Kearns, P. (2001). *Review of research: generic skills for the new economy*. South Australia: Australia National Training Authority.
- Keating, D.P. (2003). Definition and Selection of Competencies From a Human Development Perspective. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. p.143-167.
- Kennedy, P.L. & Luzar, E.J. (1999). Toward Methodological Inclusivism: The Case for Case Studies. *Review of Agricultural Economics*, Vol. 21, No. 2, pp.579-591.

- Kyle, D.W. & Hovda, R.A. (1987). Action Research: Comments on Current Trends and Future Possibilities. *Peabody Journal of Education*, Vol. 64, No.3.
- Loepp, F.L. (1999). Models of Curriculum Integration. *Journal of Technology Studies* (Vol 25, No.2)
- Luke, A., Matters, G., Herschell, P., Grace, N., Barrett, R., & Land, R. (2000). *New Basics Project Technical Paper: Education Queensland 2000 (Version 3)*. Queensland: Education Queensland.
- Merriam, S.B. (1998). *Qualitative Research and Case Study Applications in Education*. San-Francisco: Jossey-Bass Inc.
- McNiff, J. & Whitehead, J. (2002). *Action Research: Principles and Practice (2nd ed.)*. New York: Routledge Falmer Press
- Miller, J.P. & Drake, S.M. (1995). Negotiating new models of curriculum in changing times: Year 1. *Canadian Journal of Educational Administration and Policy* (No. 4, Nov 24, 1995).
- Ministry of Education. (1991). *The New Zealand Curriculum Framework*.
Accessed on: 8.10.09 Accessed at:
http://www.tki.org.nz/r/governance/nzcf/NZcurriculum_e.php
- Ministry of Education. (2005). *Key Competencies in Tertiary Education: Developing a New Zealand Framework*. Wellington: Tertiary Education Learning Outcomes Policy National Office.
- Ministry of Education. (2007). *The New Zealand Curriculum*. Wellington: Learning Media.
- Ministry of Education. (Dec 2007). *Boys' Achievement: A Synthesis of the Data*. Wellington: Education Counts.
Accessed on: 9.11.10 Accessed at:

<http://www.educationcounts.govt.nz/publications/schooling/25052/24895>

- Ministry of Education. (2009). *Ka Hikitia: Managing for Success: The Māori Education Strategy 2008-2012 – Summary*. Wellington, New Zealand: Group Maori, 2009.
- Oates, T. (2003). Key Skills/Key Competencies: Avoiding the Pitfalls of Current Initiatives. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. pp. 171-193.
- O'Steen, B., Cuper, P., Spires, H., Beal, C., & Pope, C. (2002). Curriculum Integration: Theory, Practice, and Research for a Sustainable Future. In Anfara, V.A. Jr., & Stacki, S.L. (Eds.) *Middle School Curriculum, Instruction, and Assessment* (pp.1-22). Connecticut: Information Age Publishing.
- Ouane, A. (2003). Defining and Selecting Key Competencies in Lifelong Learning. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium*. Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. pp.133-142.
- Poskitt, J. (2006). *185/186.788 Qualitative and Action Research in Education: Study Guide*. Palmerston North: Massey University.
- Queensland Government. (2004). *The New Basics Research Report*. Queensland: Department of Education and Arts, State of Queensland.
Accessed on: 9.9.09 Accessed at:
<http://education.qld.gov.au/corporate/newbasics/>
- Queensland Government. (2009). *New Basics Project*. Queensland: Department of Education & Training, Queensland Government.

Accessed on: 9.9.09

Accessed at:

<http://education.qld.gov.au/corporate/newbasics/>

Rutherford, J. (December 2004). *Key Competencies in the New Zealand Curriculum: A snapshot of consultation.*

Rychen, D.S. (2003). A Frame of Reference for Defining and Selecting Key Competencies in an International Context. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium.* Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. (p,109-116)

Salganik, L.H. (2003). Highlights from Current Assessments. . In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium.* Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. pp.195-196.

Schug, M.C. & Cross, B. (1998). The Dark Side of Curriculum Integration in Social Studies. *Social Studies (vol 89, no.2).* pp54-57.

Stake, R.E. (1995). *The Art of Case Study Research.* Thousand Oaks, California: Sage Publications.

Terry, A.W. (2008). Student Voices, Global Echoes: Service-Learning and the Gifted. *Roeper Review (Vol 30., No. 1)* pp 45-51.

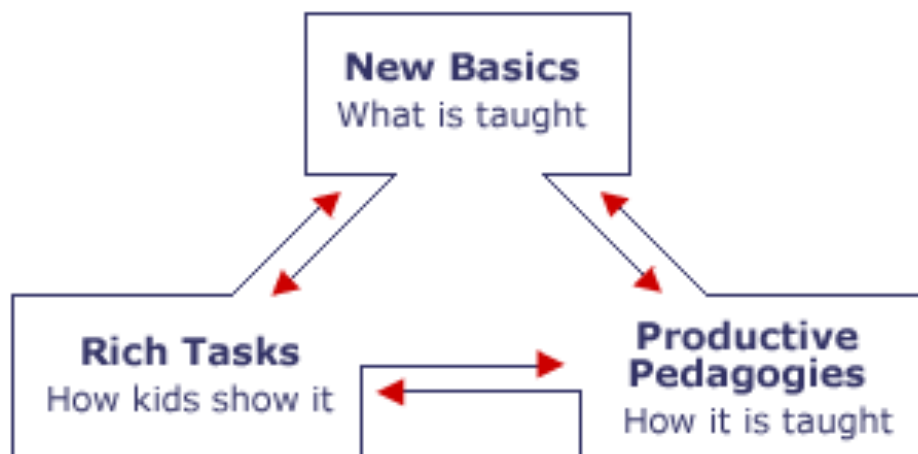
Trier, U.P. (2003). Twelve Countries Contributing to DeSeCo: A Summary Report. In D.S. Rychen, L.H. Salganik, and M.E. McLaughlin (Eds.). *The Definition and Selection of Key Competencies: Contributions to the Second DeSeCo Symposium.* Geneva, Switzerland: Swiss Federal Statistics Office: 11-13 February, 2002. pp.27-60.

- Tripp, D.H. (1990). Socially Critical Action Research. *Theory into Practice*, Vol. 29, No. 3, Teacher as Researcher. (Summer, 1990). Pp. 158-166.
- Vars, G.F. & Beane, J.A. (June 2000). Integrative Curriculum in a Standards-Based World. *ERIC Digest (June 2000: EDO-PS-00-6)*. Illinois, USA: ERIC Clearinghouse on Elementary and Early Childhood Education, University of Illinois
Accessed at: <http://ericeece.org>
- Wallace, J., Sheffield, R., Rennie, L., & Venville, G. (August 2007). Looking Back, Looking Forward: Re-Searching the Conditions for Curriculum Integration in the Middle Years of Schooling. *The Australian Educational Researcher* (Vol 34, No 2) pp.29-49.
- Williams, C. (March 2005). The discursive construction of the 'competent' learner-worker: from Key competencies to 'employability skills'. *Studies in Continuing Education* (Vol.27, No. 1). pp. 33-49.
- Williams, G.J. & Reisberg, L. (2003). Successful Inclusion: Teaching Social Skills Through Curriculum Integration. *Intervention in School and Clinic* (Vol. 38, No.4). pp. 205-210.
- Wolger, J. (1998). Managing Change. In Tilstone, C., Florian, L., & Rose, R. (Eds.) *Promoting Inclusive Practice* (pp.78-92). London: Routledge.
- Yin, R.K. (1993). *Applications of Case Study Research (1st ed.)*. Thousand Oaks, California: Sage Publications.
- Yin, R.K. (2003). *Applications of Case Study Research (2nd ed.)*. Thousand Oaks, California: Sage Publications.
- Yin, R.K. (2009). *Case Study Research Design and Methods (4th ed.)*. Thousand Oaks, California: Sage Publications.

Youngblood, D. (2007). Interdisciplinary Studies and the Bridging Disciplines: A Matter of Process. *Journal of Research Practice* (Vol 3, No.2).

APPENDICES

Appendix 1: The Queensland *New Basics* Model



Further information on Queensland *New Basics Rich Tasks* can be found through the following links:

<http://education.qld.gov.au/corporate/newbasics/>

<http://education.qld.gov.au/corporate/newbasics/pdfs/richtasksbklet.pdf>

Appendix 2: The Mayer Key Competencies

The Mayer Report: key competencies for effective participation in the emerging patterns of work and work organisation

- Collecting, analysing and organising information
- Communicating ideas and information
- Planning and organising activities
- Working with others and in teams
- Using mathematical ideas and techniques
- Solving problems
- Using technology

as cited in Kearns (2001)

Appendix 3i: Teacher Pre-Interview Schedule

Enhancing Student Achievement through Curriculum Integration based on New Zealand's Key Competencies:

A Descriptive Case Study

TEACHER INTERVIEW SCHEDULE: Prior to Unit Commencement

- 1. What is your understanding of curriculum integration?**
 - Theoretically?
 - Practically?
- 2. What is your understanding of the Queensland New Basics Rich Task model?**
 - a. What do you think are the key principles behind using the rich task model?
 - b. How are you currently using the Rich Task model in your classroom?
 - c. What impact does a rich learning approach have on children's learning?
 - d. What do you perceive as the benefits or risks of rich learning in your classroom?
- 3. What is your understanding of the New Zealand curriculum key competencies?**
 - a. How are you currently planning for and teaching key competencies in your classroom?
 - b. Where do you see key competencies fitting in your teaching and learning programme?
 - c. What challenges are you facing with key competencies?
 - d. What benefits do you think the key competencies offer for teaching and learning?
- 4. How are you managing change in your classroom and as a school?**
 - a. In regards to the implementation of rich learning?
 - b. In regards to the implementation of key competencies?
 - c. How are you being supported in this?

Appendix 3ii: Teacher Post-Interview Schedule

Enhancing Student Achievement through Curriculum Integration based on New Zealand's Key Competencies:

A Descriptive Case Study

TEACHER INTERVIEW SCHEDULE: At the End of the Unit

1. What is your understanding of curriculum integration now?
2. What is your understanding of the New Zealand curriculum key competencies now?
 - a. How has your teaching of the key competencies changed in your classroom?
 - b. What benefits have you noticed through teaching the key competencies through rich learning?
 - c. What challenges are you still facing with key competencies?
3. How has the use of the key competencies as the focus for learning and the method of curriculum integration ...
 - a. Impacted your planning, teaching and assessing methods?
 - b. Impacted your students' achievement and understanding?
 - *Engagement?*
 - *Higher order thinking?*
 - *Problem solving or inquiry?*
 - *Depth of understanding?*
 - *Transferability of understandings?*
4. How have you managed this change in your classroom and as a school?
 - a. In regards to the implementation of rich learning?
 - b. In regards to the implementation of key competencies?
5. Do you have any other comments?

Appendix 3iii: Student Post-Interview Schedule

**Enhancing Student Achievement through Curriculum Integration based on New Zealand's
Key Competencies:**

A Descriptive Case Study

STUDENT INTERVIEW SCHEDULE

1. What were you learning about in this rich learning unit?
2. Why were you learning about this?
3. How did you learn about this?
4. How did you think you went in this unit? What was your self-assessment of your learning?
5. What do you know now that you didn't know before?
6. What was the most interesting part of this unit or thing that you learnt?
7. What didn't you like about the unit? What do you wish you or the teacher had changed?

November 13, 2010

Appendix 4i: School Observational Matrix Tool - Teachers

Date: Teacher initials: Room: Class year level:

Criteria	Novice	Apprentice	Practitioner	Expert
Teacher Clarity (shown through explanations to children)	Few explanations are clear; rarely reflecting key deep understandings/ knowledge	Some explanations are clear, sometimes reflecting key deep understandings/ knowledge	Most explanations are clear; often reflecting key deep understandings/ knowledge	All explanations are clear; always reflecting key deep understandings/ knowledge
Teacher Clarity (articulating to colleagues)	Vaguely or rarely explains what, why or how teaching. Few references to examples.	Sometimes, with some clarity, explains what, why or how teaching. Some examples from own practice.	Mostly clearly explains what, why and how teach. Supports with some reference to research theory or own practice.	Always clearly explains what, why and how teach. Always supporting explanation with reference to relevant research theory and own practical examples
Questioning	Few significant and open-ended questions	Some significant and open-ended questions	Mostly significant and open-ended questions	Always significant and open-ended questions
Making Connections	Few, if any, connections made to prior learning.	Some connections made to prior learning	Many connections made to prior learning	Always connections made to prior learning
Transferability	Few ideas transferable. Few links made across curriculum	Some ideas possibly transferable; Some links made across curriculum	Most ideas transferable; many links made across curriculum	All ideas transferable; many natural links made across curriculum
Productive Pedagogies	Few, if any, productive pedagogies used and planned for	Some productive pedagogies used and planned for	Many productive pedagogies used and planned for	Many various productive pedagogies used and planned for
Planning: Rich Learning Components	Few of key rich learning components included and effectively articulated	Some of key rich learning components included and effectively articulated	Most of key rich learning components included and effectively articulated	All of key rich learning components included and effectively articulated
Planning: Alignment of rich learning components	Rarely shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.	Sometimes shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.	Often shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.	Always shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.
Planning: Transdisciplinary	Rarely draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency	Sometimes draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency	Often draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency	Always draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency
Alignment of planning, teaching & assessment	Rarely aligns planning, teaching, learning and assessment and planned activities.	Sometimes aligns planning, teaching, learning and assessment	Often aligns planning, teaching, learning and assessment	Always aligns planning, teaching, learning and assessment
Assessment	Rarely uses assessment to inform teaching and learning; rarely uses formative, self or peer assessment.	Sometimes uses assessment to inform teaching and learning; sometimes uses formative, self or peer assessment.	Often uses assessment to inform teaching and learning; often uses range of assessment methods.	Always uses assessment to inform teaching and learning; always uses range of assessment methods.

Rich Learning Components: Deep Understandings, Deep Knowledge, Productive Pedagogies, Rich Tasks & Significant Questions – see Rich Learning Graphic Puzzle.
Productive Pedagogies: Pedagogical tools or strategies used to develop and scaffold learning – see Rich Learning Graphic Puzzle.

November 13, 2010

Appendix 4ii: School Observational Matrix Tool - Students

Date: _____ Room: _____ Year Level: _____ Child(if applicable): _____



Criteria	Novice	Apprentice	Practitioner	Expert
Reflective Thinking (applies to during and after learning)	Few or no connections made to other learning. Rarely identifies next steps in learning. Remembers and understands some learning. Rarely or never applies learning.	Some connections made to other learning. Sometimes identifies next steps in learning. Mostly remembers, understands and sometimes applies learning.	Many connections made to other learning. Often identifies next steps in learning. Always remembers, understands and often applies learning.	Always makes connections to other learning. Always identifies next steps in learning. Always remembers, understands and applies learning.
Critical Thinking	Rarely questions in learning Rarely and evaluates analyses in learning	Sometimes questions in learning Sometimes analyses and evaluates in learning	Often questions in learning Often analyses and evaluates in learning.	Always questions information Always analyses and evaluates in learning.
Creative Thinking	Rarely, or never, identifies other strategies, ideas or creates in learning.	Sometimes identifies other strategies, ideas or creates in learning.	Mostly identifies other strategies, ideas or creates in learning.	Often identifies other strategies, ideas or creates in learning.
Active participation	Needs frequent support and guidance to focus in learning	Often needs support and guidance to focus. Sometimes selects appropriate strategies	Sometimes needs support and guidance to focus. Mostly selects appropriate strategies	Rarely needs support and guidance to focus. Often selects appropriate strategies.
Help-seeking / Risk-taking	Rarely asks for assistance or seeks help when needed. Rarely takes risks.	Sometimes asks for assistance or seeks relevant resources to help when needed. Sometimes takes risks.	Mostly asks for assistance or seeks relevant resources to help when needed. Mostly takes risks.	Always asks for assistance or seeks relevant resources to help when needed. Often takes risks.
Persistence	Rarely continues with task; needs support to overcome setbacks	Sometimes continues with a task; sometimes overcoming setbacks	Mostly continues with a task; mostly overcoming setbacks	Often continues with a task; often overcoming setbacks
Clarity about learning focus	Articulates one aspect (what, why or how)	Sometimes able to articulate 2 of 3 aspects (what, how or why).	Mostly able to articulate 2 of the 3 aspects (what, how or why).	Able to articulate what learning, why and how
Engagement	Rarely engages in learning; shows little interest	Sometimes engages in learning; shows some interest	Often engages in learning; shows consistent interest	Always engages in learning; always shows high level of interest.
Problem solving/ Inquiry	Rarely recognises when problems/questions arise, needs extensive support to explore and devise solutions/answers	Sometimes recognises when problems/questions arise, often needs support to explore and devise few solutions/answers	Mostly recognises when problems/questions arise, sometimes needs support to explore and devise some solutions/answers	Always recognises when problems/questions arise, rarely needs support to explore and devise variety of solutions/answers
Rich Task Assessment	Few learning intentions evident in model, product or performance	Some learning intentions evident in model, product or performance	Most learning intentions evident in model, product or performance	All learning intentions evident in model, product or performance
Audience Awareness	Rarely shows awareness of audience; learning communicated with little clarity	Sometimes shows awareness of audience; learning communicated with some clarity	Often shows awareness of audience; learning communicated with reasonable clarity	Always shows awareness of audience; learning fully and clearly communicated.

Appendix 5: Research Plan

1. The research problem and hypothesis was identified.
2. The literature was reviewed, considering the issues surrounding the problem and the proposal written up. Ethical approval was then applied for and gained.
At this point the researcher designed a model of curriculum integration (Rich Learning), reflecting the school's development process, and identified key components for Rich Learning in the school. Using an observational matrix developed by the EHSAS Wykehamist cluster to monitor Rich Tasks, the researcher developed this into a model for the school, and the researcher, to use with both students and teachers.
3. Collecting and storing data
 - Classroom teachers were interviewed about their understandings of the *Key Competencies* from the New Zealand Curriculum, curriculum integration, the Queensland New Basics model, how they use all of these in their classrooms and on the management of the change process in the school.
 - Teachers were worked with to enhance their understandings of the school's developed model of curriculum integration (Rich Learning) and the key competencies.
 - In collaboration with classroom teachers, a planning model for Rich Learning was used to plan, teach, assess, evaluate and reflect on in a rich learning unit.
 - Three observations of twenty minutes for each class were carried out during the course of the Rich Learning unit using the observational matrix tool developed by the researcher.
 - Once a week, as a regular part of staff meetings, a discussion time was held (no more than ten minutes) with the classroom teachers to reflect on our observations and emerging themes.
 - Once a week, as a regular part of the rich learning unit, students recorded reflections on their rich learning development and noted evidence of how they were progressing in the Rich Learning unit in a learning journal.
 - Teacher's planning, assessment and evaluation documents related to the Rich Learning Unit were collected for analysis.

- At the end of the unit, the researcher interviewed three children from each class across a spectrum of achievement in the unit. These children were interviewed in their class focus groups to evaluate their perceptions of the richness, depth and breadth of the learning, their motivation and engagement in learning and their achievement in the unit.
- At the end of the unit, the classroom teachers were interviewed once more to find out their perceptions of the ease of using the model to plan, teach and assess from as well as how well they felt it enhanced student achievement; reflections for further improvement.

4. generating and testing statements and interpreting the analytical statements

Initial data analysis begun with transcription of the interviews, subsequent coding and content analysis of the interviews, teacher's planning, assessments and evaluations, and observational records. Further and final data analysis took place across all methods of data collection, finding categories and emerging patterns at the end of data collection.

5. deciding on the outcome and writing the case report, and finishing and publishing

Once data analysis was complete, the findings were formalized and the report written.

Appendix 6i: Teacher Consent Forms

Enhancing Student Achievement through Curriculum Integration based on New
Zealand's Key Competencies:

A Descriptive Case Study

PARTICIPANT CONSENT FORM

TEACHER

This consent form will be held for a period of five (5) years

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being audio taped.

I wish/do not wish to have my tapes returned to me.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature:

Date:

Full Name - printed

Appendix 6ii: Student Consent Forms

Enhancing Student Achievement through Curriculum Integration based on New
Zealand's Key Competencies:

A Descriptive Case Study

PARTICIPANT CONSENT FORM

STUDENTS

This consent form will be held for a period of five (5) years

I have read the Information Sheet and understand what the study is about. My questions have been answered. I understand that I may ask further questions at any time.

I agree/do not agree to the interview being audio taped.

I agree to not talk about anything discussed in the Focus Group.

I agree to join in this study.

Child's Signature:

Date:

Child's Full Name -
printed

I agree for my son/daughter to participate in this study under the conditions set out in the Information Sheet.

Parent's Signature:

Date:

Parent's Full Name -
printed

Appendix 7i: Information Sheet Sample - Students

Enhancing Student Achievement through Curriculum Integration based on New Zealand's Key Competencies: A Descriptive Case Study

INFORMATION SHEET STUDENTS

Introduction

Miss Matangi, teacher of Room [REDACTED] is completing her Masters of Philosophy (Education) through Massey University. Miss Matangi wants to do a study to help our school develop a model of rich learning across a range of subject areas

Project Description & Invitation

Miss Matangi wants to answer the following question:

How can rich learning be developed to help us achieve better understanding?

The key goal of the study is:

- To design a model of rich learning
- To enhance student learning and achievement.

Miss Matangi would like to invite three students from each class to be in the study. These students would be observed during the unit of rich learning and interviewed at the end. The study will be in Term 3 of 2009.

Participant Identification and Recruitment

Miss Matangi would like to invite you to be part of the study. If you agree to be in the study, Miss Matangi will watch you during the rich learning task and talk to you about your learning at the end of the unit. You will know Miss Matangi is being a researcher when:

- She wears a hat.
- You and your teacher know she is coming in to the classroom to watch you during your learning in the rich learning unit.
- Miss Matangi talks to you in a group in the classroom while the rest of the class are involved in group work so you don't feel uncomfortable or feel singled out.
- If you are a student in Room [REDACTED], you will be interviewed by Mrs [REDACTED] so you don't feel pressure to say particular things because Miss Matangi is your teacher.
- Miss Matangi will observe you and your teacher in your classroom using a matrix that has been developed for rich learning units.
- If you are a student in Room [REDACTED], a teacher outside of our school will observe you and Miss Matangi instead using the same matrix.

Project Procedures and Data Management

Research information will be collected in a group interviews, teacher interviews and observations of

Project Procedures and Data Management

Research information will be collected in a group interviews, teacher interviews and observations of students and the teacher.

Interviews will be audio-taped.

Observations will follow a specific list of things and be carried out throughout the unit.

All research information will be stored in locked filing cabinets and password protected computer files. The data will be destroyed once Miss Matangi's masters' thesis has been completed and marked. The data will be analysed by Miss Matangi and reported in the final report, and any publications and presentations arising from this research. Your names will not be used the final report.

The school will be given a copy of the report and held at the office so that you can read it if you want to.

Participant's Rights

You do not have to join in this study. If you decide to join in, you have the right to:

- not answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study ;
- ask for the audio tape to be turned off at any time during the interview.

Project Contacts

If you have any questions regarding this research, please contact

Massey University
Private Bag 11-222
Palmerston North
06-350-5799

Massey University
Private Bag 11-222
Palmerston North
06-350-5799

"This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application [REDACTED]. If you have any concerns about the conduct of this research, please contact [REDACTED], Chair, Massey University Human Ethics Committee: Southern B, telephone [REDACTED], email [REDACTED]."

Appendix 7ii: Information Sheet Sample – Teachers

Enhancing Student Achievement through Curriculum Integration based on New Zealand's Key Competencies: A Descriptive Case Study

INFORMATION SHEET TEACHERS

Introduction

Ana Matangi, teacher of Room 1 is currently completing her Masters of Philosophy (Education) through Massey University and is proposing to conduct a study to help our school develop a model of rich learning that is based on the New Zealand curriculum's new key competencies and develops rich and deep learning across a range of curricula areas and contexts.

Project Description & Invitation

Ana aims to address the following question in this study:

How can a model of curriculum integration be used to form a basis for the effective development, and implementation, of, the New Zealand curriculum's key competencies to enhance student achievement in all learning?

The key objectives of the study are:

- To design a model of curriculum integration based on the *Queensland New Basics Rich Tasks* model that uses *Key Competencies* as its basis for learning development.
- To investigate methods for planning, teaching and assessing the *Key Competencies*.
- To use the model of curriculum integration and the *Key Competencies* to enhance student achievement.

Ana would like to invite all teachers to participate in the study and seeks your consent to participate in this study. The study will be conducted in Term 3 of 2009.

Participant Identification and Recruitment

Ana has identified all teachers participating in the planning, teaching and assessing of rich learning as potential participants. She has also identified three children from each class based on their teacher's nominations of children based on a range of achievement results in the previous unit of rich learning. Ana would like to collect information on teacher's interactions with students, their planning and their own understandings and observations through the unit.

As a teacher, Ana will be involved in the development of the unit across the school, teaching of the unit in her own classroom, and carrying out the research observations and interviews. Ana acknowledges that as a teacher in the school, her role as a researcher presents some potential bias and conflict of interest in working with both her colleagues and students as participants. As such Ana will endeavour to overcome this by:

- Wearing a particular article of clothing (hat) to distinguish when she is in her researcher role.

acknowledges that as a teacher in the school, her role as a researcher presents some potential bias and conflict of interest in working with both her colleagues and students as participants. As such Ana will endeavour to overcome this by:

- Wearing a particular article of clothing (hat) to distinguish when she is in her researcher role.
- Ensuring that the students and teachers are both aware when she is coming in to the classroom to carry out observations as a researcher.
- Interviewing students in groups and in the classroom while the rest of the class are involved in group work
- Asking [REDACTED] to interview students in Room [REDACTED] to prevent discomfort to these students as Ana is their regular classroom teacher.
- Observing teacher and student interactions using a matrix that has been developed for rich learning units.
- Having an external researcher observe the teacher and student interactions in Room [REDACTED] using the same matrix.
- Ensuring that teachers feel comfortable during observations and discussions and that they feel valued as part of a study that helps teachers, students and our school as a whole develop our methods of teaching and learning.

Project Procedures and Data Management

The methods of data collection will include teacher interviews, group teacher discussions and reflections, focus group interviews and observations of students and the teacher. Interviews will involve the classroom teacher, prior to beginning the planning, teaching and assessment of the unit and after the completion of the unit; and interviews will also involve the three identified participating students once the unit has been completed. Interviews will be audio-taped and transcriptions will be made available to teacher participants for checking. However, student interview transcriptions will not be made available to students to review as not all students will have the literacy skills to enable them to have the capacity to edit the transcriptions. Observations will follow a specific scale and be carried out throughout the unit, however; only the data collected of those who agree to participate in the study will be used for research purposes. Data collected from interviews, teacher discussions and observations will be used to ascertain the development of understandings in both children and teachers of the model and the effectiveness of the model.

The time Involvement for students will be approximately fifteen minutes at the completion of the unit when they are interviewed. Observations will occur during normal class time and thus require no time commitment from students and not require them to be removed from normal class learning. The interviews will be conducted during class time, so students may miss up to fifteen minutes of normal class learning time.

The time involvement for teachers will be approximately twenty minutes in total: ten minutes in interviewing prior to the unit and ten minutes in interviewing at the completion of the unit. Observations will not require extra time commitment as they will occur within their normal

teaching time and regular reflective discussions (of no more than ten minutes) will be integrated into the normal weekly staff meeting and will not require any additional time commitment.

teaching time and regular reflective discussions (of no more than ten minutes) will be integrated into the normal weekly staff meeting and will not require any additional time commitment.

All data will be stored in locked filing cabinets and password protected computer files. The data will be destroyed once the masters' thesis has been completed and marked. The data will be analysed by the researcher and reported in the final report, and any publications and presentations arising from this research. The participants in the study will not be named in the final report (rather pseudonyms or positions will be used) and the researcher will do her utmost to ensure that no participant is identifiable. A summary of the project findings will be made available to all participants.

Participant's Rights

You are under no obligation to accept this invitation to participate in this study. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded;
- ask for the audio tape to be turned off at any time during the interview.

Project Contacts

If you have any questions regarding this research, please contact

[REDACTED]
[REDACTED]
Massey University
Private Bag 11-222
Palmerston North
06-350-5799
[REDACTED]

Massey University
Private Bag 11-222
Palmerston North
06-350-5799

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application [REDACTED]. If you have any concerns about the conduct of this research, please contact [REDACTED], Chair, Massey University Human Ethics Committee: Southern B, telephone [REDACTED], email [REDACTED]

November 13, 2010

Appendix 8: Teacher Observations During the Unit – Using School Observation Matrix for Teachers

Observation 1 – 13-20 October 2009 Observation 2 – 3-10 November 2009

Criteria	Novice	Apprentice	Practitioner	Expert
Teacher Clarity (to children)	Few explanations are clear; rarely reflecting key deep understandings/ knowledge	Some explanations are clear; sometimes reflecting key deep understandings/ knowledge	Most explanations are clear; often reflecting key deep understandings/ knowledge	All explanations are clear; always reflecting key deep understandings/ knowledge
Teacher Clarity (to colleagues)	Vaguely or rarely explains what, why or how teaching. Few references to examples.	Sometimes, with some clarity, explains what, why or how teaching. Some examples from own practice.	Mostly clearly explains what, why and how teach. Supports with some reference to research theory or own practice.	Always clearly explains what, why and how teach. Always supporting explanation with reference to relevant research theory and own practical examples
Questioning	Few significant and open-ended questions	Some significant and open-ended questions	Mostly significant and open-ended questions	Always significant and open-ended questions
Making Connections	Few, if any, connections made to prior learning.	Some connections made to prior learning	Many connections made to prior learning	Always connections made to prior learning
Transferability	Few ideas transferable. Few links made across curriculum	Some ideas possibly transferable; Some links made across curriculum	Most ideas transferable; many links made across curriculum	All ideas transferable; many natural links made across curriculum
Productive Pedagogies	Few, if any, productive pedagogies used and planned for	Some productive pedagogies used and planned for	Many productive pedagogies used and planned for	Many various productive pedagogies used and planned for
Planning: Rich Learning Components	Few of key rich learning components included and effectively articulated	Some of key rich learning components included and effectively articulated	Most of key rich learning components included and effectively articulated	All of key rich learning components included and effectively articulated
Planning: Alignment of rich learning components	Rarely shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.	Sometimes shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.	Often shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.	Always shows links between deep understanding, deep knowledge, significant questions, learning intentions and planned activities.
Planning: Transdisciplinary	Rarely draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency	Sometimes draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency	Often draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency	Always draws on key knowledge, skills and competencies across the curriculum, including at least two curriculum areas and one key competency
Alignment of planning, teaching & assessment	Rarely aligns planning, teaching, learning and assessment	Sometimes aligns planning, teaching, learning and assessment	Often aligns planning, teaching, learning and assessment	Always aligns planning, teaching, learning and assessment
Assessment	Rarely uses assessment to inform teaching and learning; rarely uses formative, self or peer assessment.	Sometimes uses assessment to inform teaching and learning; sometimes uses formative, self or peer assessment.	Often uses assessment to inform teaching and learning; often uses range of assessment methods.	Always uses assessment to inform teaching and learning; always uses range of assessment methods.

November 13, 2010

Appendix 9: Student Observations During the Unit – Using School Observation Matrix for Students

Observation 1 – 13-20 October 2009 Observation 2 – 3-10 November 2009

Criteria	Novice	Apprentice	Practitioner	Expert
Reflective Thinking (applies to during and after learning)	Few or no connections made to other learning. Rarely identifies next steps in learning. Remembers and understands some learning. Rarely or never applies learning. Year 1-2 Year 3-4	Some connections made to other learning. Sometimes identifies next steps in learning. Mostly remembers, understands and sometimes applies learning. Year 1-2 Year 3-4 Year 5-6	Many connections made to other learning. Often identifies next steps in learning. Always remembers, understands and often applies learning. Year 7-8 Year 3-4	Always makes connections to other learning. Always identifies next steps in learning. Always remembers, understands and applies learning. Year 5-6
Critical Thinking	Rarely questions in learning Rarely and evaluates analyses in learning Year 1-2	Sometimes questions in learning Sometimes analyses and evaluates in learning Year 1-2 Year 3-4 Year 5-6	Often questions in learning Often analyses and evaluates in learning. Year 5-6 Year 3-4 Year 5-6	Always questions information Always analyses and evaluates in learning.
Creative Thinking	Rarely, or never, identifies other strategies, ideas or creates in learning. Year 3-4 Year 1-2	Sometimes identifies other strategies, ideas or creates in learning. Year 3-4 Year 1-2	Mostly identifies other strategies, ideas or creates in learning. Year 7-8 Year 3-4	Often identifies other strategies, ideas or creates in learning. Year 5-6
Active participation	Needs frequent support and guidance to focus in learning Year 1-2	Often needs support and guidance to focus. Sometimes selects appropriate strategies Year 1-2	Sometimes needs support and guidance to focus. Mostly selects appropriate strategies Year 3-4 Year 7-8 Year 5-6	Rarely needs support and guidance to focus. Often selects appropriate strategies. Year 5-6
Help-seeking / Risk-taking	Rarely asks for assistance or seeks help when needed. Rarely takes risks.	Sometimes asks for assistance or seeks relevant resources to help when needed. Sometimes takes risks.	Mostly asks for assistance or seeks relevant resources to help when needed. Mostly takes risks. Year 1-2 Year 3-4 Year 7-8 Year 5-6	Always asks for assistance or seeks relevant resources to help when needed. Often takes risks.
Persistence	Rarely continues with task; needs support to overcome setbacks	Sometimes continues with a task; sometimes overcoming setbacks Year 1-2	Mostly continues with a task; mostly overcoming setbacks Year 3-4 Year 7-8 Year 5-6	Often continues with a task; often overcoming setbacks Year 5-6
Clarity about learning focus	Articulates one aspect (what, why or how)	Sometimes able to articulate 2 of 3 aspects (what, how or why). Year 1-2 Year 3-4	Mostly able to articulate 2 of the 3 aspects (what, how or why). Year 7-8 Year 1-2 Year 3-4	Able to articulate what learning, why and how Year 5-6 Year 5-6
Engagement	Rarely engages in learning; shows little interest	Sometimes engages in learning; shows some interest	Often engages in learning; shows consistent interest Year 3-4 Year 7-8 Year 5-6	Always engages in learning; always shows high level of interest. Year 1-2 Year 5-6 Year 1-2 Year 3-4
Problem solving/ Inquiry	Rarely recognises when problems/questions arise, needs extensive support to explore and devise solutions/answers Year 1-2	Sometimes recognises when problems/questions arise, often needs support to explore and devise few solutions/answers Year 3-4 Year 1-2 Year 3-4	Mostly recognises when problems/questions arise, sometimes needs support to explore and devise some solutions/answers Year 7-8 Year 5-6	Always recognises when problems/questions arise, rarely needs support to explore and devise variety of solutions/answers

Appendix 10: Rich Learning Collaborative Plan – A World of Mystery

Primary School Rich Learning Outline	Term 3-4, 2009		
The World of Mystery: How can we solve problems?			
Deeper Understanding What the students will know and understand from the unit.	Learning Disposition What learning disposition will be developed as children work through the unit.		
<ul style="list-style-type: none"> Patterns and relationships help us make sense of the world around us. 	<ul style="list-style-type: none"> Think critically 		
<p style="text-align: center;">Context Why this unit is relevant for our students</p> <p>The context for this unit is problem-solving with a specific lens through the notions of mysteries. Problem-solving is an important aspect of learning development and it encourages learners to critically think about problems and the processes they can take to solve problems. Problem solving leads to reflective, creative and metacognitive thinking as well as high order, critical thinking skills and learners that are risk-takers. The use of mysteries provides a meaningful and engaging context for the children.</p>			
<p style="text-align: center;">Deeper Knowledge – Curricula Links What knowledge and skills are being developed?</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> Information is shaped for different purposes and a variety of audiences: different cultures, communities and organisations. <i>(Social Sciences/Using L,S,T/English)</i> Information is communicated and presented in many different ways because of changing technology. <i>(Technology/Using L,S,T)</i> </td><td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> Finding relationships, interpreting and evaluating statistics and data <i>(Math and Statistics/ Thinking/Using L,S, T)</i> Making meaning of information from a variety of forms of language. <i>(English/Using L,S,T)</i> Create meaning from information using a variety of forms of language <i>(English/Using L,S,T)</i> Critical Thinking <i>(Thinking)</i> Problem Solving <i>(Thinking)</i> Social Inquiry <i>(Social Sciences/Thinking)</i> </td></tr> </table>		<ul style="list-style-type: none"> Information is shaped for different purposes and a variety of audiences: different cultures, communities and organisations. <i>(Social Sciences/Using L,S,T/English)</i> Information is communicated and presented in many different ways because of changing technology. <i>(Technology/Using L,S,T)</i> 	<ul style="list-style-type: none"> Finding relationships, interpreting and evaluating statistics and data <i>(Math and Statistics/ Thinking/Using L,S, T)</i> Making meaning of information from a variety of forms of language. <i>(English/Using L,S,T)</i> Create meaning from information using a variety of forms of language <i>(English/Using L,S,T)</i> Critical Thinking <i>(Thinking)</i> Problem Solving <i>(Thinking)</i> Social Inquiry <i>(Social Sciences/Thinking)</i>
<ul style="list-style-type: none"> Information is shaped for different purposes and a variety of audiences: different cultures, communities and organisations. <i>(Social Sciences/Using L,S,T/English)</i> Information is communicated and presented in many different ways because of changing technology. <i>(Technology/Using L,S,T)</i> 	<ul style="list-style-type: none"> Finding relationships, interpreting and evaluating statistics and data <i>(Math and Statistics/ Thinking/Using L,S, T)</i> Making meaning of information from a variety of forms of language. <i>(English/Using L,S,T)</i> Create meaning from information using a variety of forms of language <i>(English/Using L,S,T)</i> Critical Thinking <i>(Thinking)</i> Problem Solving <i>(Thinking)</i> Social Inquiry <i>(Social Sciences/Thinking)</i> 		
<p style="text-align: center;">Culminating Rich Assessment What the students are expected to produce.</p> <p>Children will independently present an explanation or report detailing how to solve a problem or mystery and their learning journey through solving a problem they have identified.</p>			

Learning Intentions

<p style="text-align: center;">What specific knowledge and skills do we want children to learn? (From Deeper Knowledge)</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> Describe what mysteries and problems are Identify and compare different types of mysteries and problems Identify components that help us solve problems: critical thinking, information/clues/ evidence gathering, analysing & evaluating, Identify and compare ways in which problems can be solved Identify things that can impair solving mysteries/ problems: lack of information/ evidence, red herrings, different people's perspectives. </td><td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> Identify ways in which information can be gathered Identify and describe how knowledge is shaped for different purposes by different people in different ways Analyse and evaluate the worth and validity of information gathered Use the inquiry process to gather information about a problem or mystery Use higher order thinking skills to develop deep comprehension about a problem/mystery Use and describe the learning journey process Use problem-solving method to find answers to a mystery/problem Identify strategies for solving problems </td></tr> </table>		<ul style="list-style-type: none"> Describe what mysteries and problems are Identify and compare different types of mysteries and problems Identify components that help us solve problems: critical thinking, information/clues/ evidence gathering, analysing & evaluating, Identify and compare ways in which problems can be solved Identify things that can impair solving mysteries/ problems: lack of information/ evidence, red herrings, different people's perspectives. 	<ul style="list-style-type: none"> Identify ways in which information can be gathered Identify and describe how knowledge is shaped for different purposes by different people in different ways Analyse and evaluate the worth and validity of information gathered Use the inquiry process to gather information about a problem or mystery Use higher order thinking skills to develop deep comprehension about a problem/mystery Use and describe the learning journey process Use problem-solving method to find answers to a mystery/problem Identify strategies for solving problems
<ul style="list-style-type: none"> Describe what mysteries and problems are Identify and compare different types of mysteries and problems Identify components that help us solve problems: critical thinking, information/clues/ evidence gathering, analysing & evaluating, Identify and compare ways in which problems can be solved Identify things that can impair solving mysteries/ problems: lack of information/ evidence, red herrings, different people's perspectives. 	<ul style="list-style-type: none"> Identify ways in which information can be gathered Identify and describe how knowledge is shaped for different purposes by different people in different ways Analyse and evaluate the worth and validity of information gathered Use the inquiry process to gather information about a problem or mystery Use higher order thinking skills to develop deep comprehension about a problem/mystery Use and describe the learning journey process Use problem-solving method to find answers to a mystery/problem Identify strategies for solving problems 		

Appendix 11: Figure for Deeper Understanding – Example

DEEPER UNDERSTANDING (1)



(Ana Matangi-Hulls, 9 December 2009)

November 13, 2010

Appendix 12: Planning Template

Primary School
Rich Learning Outline

Term _____
Year _____

The World of Mystery: How can we solve problems?

Deeper Understanding
What the students will know and understand from the unit.

Learning Disposition
What learning disposition will be developed as children work through the unit.

Context

Why this unit is relevant for our students

Deeper Knowledge – Curricula Links

What knowledge and skills are being developed?

Culminating Rich Assessment

What the students are expected to produce.

Learning Intentions

What specific learning do we want children to achieve?
(From Deeper Knowledge)

Resources

What resources are available to support learning?

Teaching and Learning Scaffolding Sequence

Tuning In

Activating Prior Knowledge

Deeper knowledge being focused on is...
•

Significant questions being focused on are...
•

Productive
Pedagogies

Learning Intentions

Learning Activities

November 13, 2010

	•	•
--	---	---

Whole Class Inquiry

Remembering / Understanding / Applying / Analysing

Deeper knowledge being focused on is... •	Significant questions being focused on are... •
Productive Pedagogies	Learning Intentions
	Learning Activities
	•

Whole Class Problem Solving

Applying / Analysing / Evaluating / Creating

Deeper knowledge being focused on is... •	Significant questions being focused on are... •
Productive Pedagogies	Learning Intentions
	Learning Activities
	•

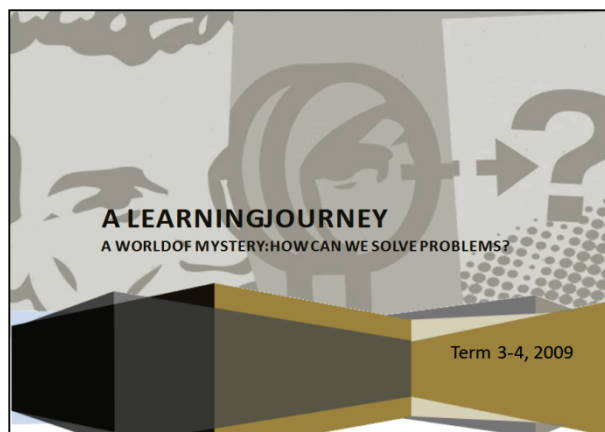
Culminating Rich Assessment:

Individual Inquiry & Problem Solving (*learning journey*)

Creating

Deeper knowledge being focused on is... ✓	Significant questions being focused on are...
Productive Pedagogies	Learning Intentions
	Learning Activities
	•

Appendix 13: Learning Journey Template



1) Stating the Problem:

Describe a problem or mystery that needs to be investigated...

Why is this a problem or a mystery?

Write your problem statement or question you need an answer to:

2) Remembering – Activating Knowledge & Planning for Investigation

K	W	H	L
What do I know already?	What do I need to know?	How will I find this out?	What have I learned?

3) Remembering – Gathering the Information:

Key Words	Resource Used...	Date...

4) Understanding – Gathering Information

My Notes...

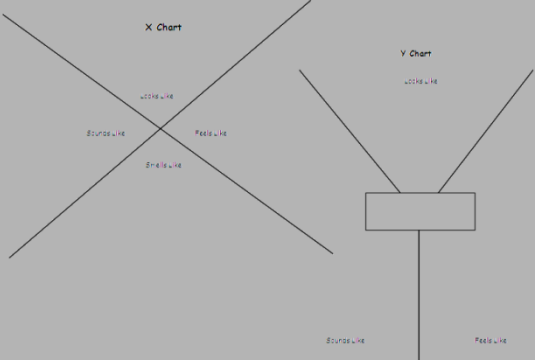
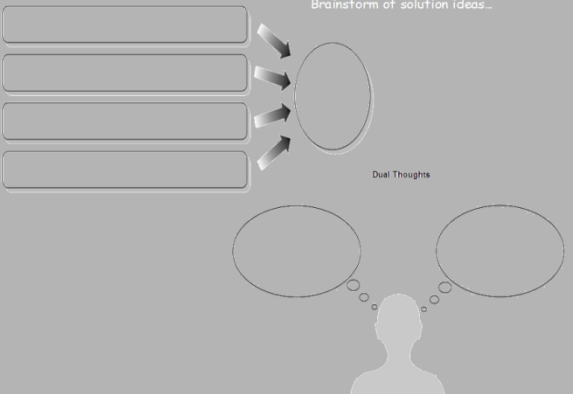
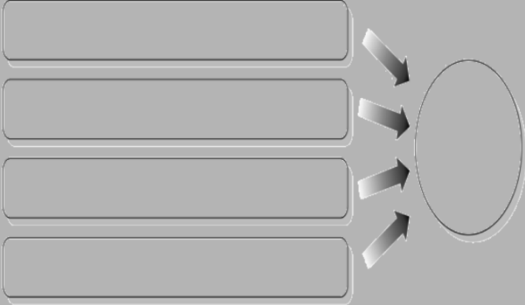
5) Applying – What information have I found?

6) Analysing – Sorting & Categorising Relevant Information for our Questions

9) Evaluating – Thinking Critically...

P (positive or useful)	M (minus/false/ not relevant)	I (interesting)

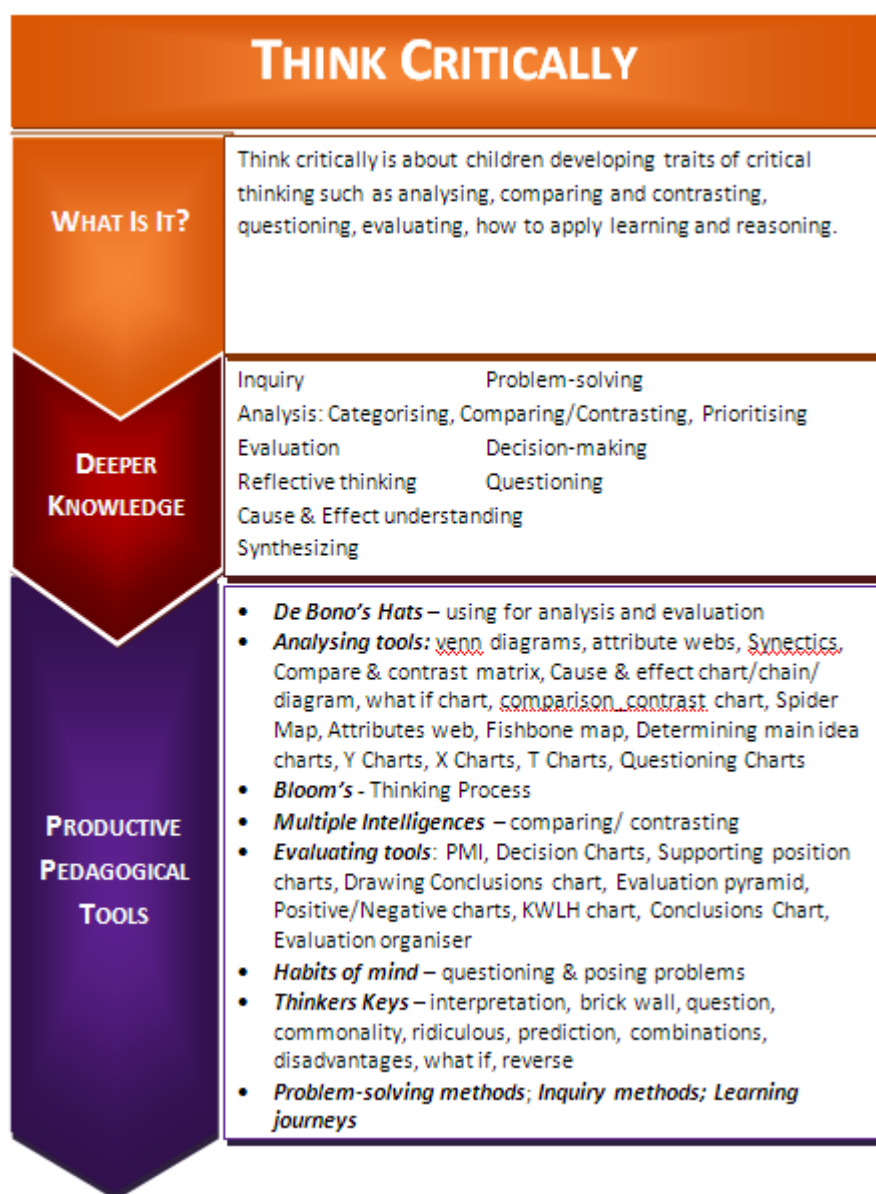
November 13, 2010

<p>Brainstorm of solution ideas...</p>  <p>The diagram illustrates two brainstorming structures. The 'X Chart' consists of two intersecting diagonal lines forming an 'X' shape, with labels 'Source', 'Use', 'Feasible', and 'End Use' at the intersections. The 'Y Chart' consists of a horizontal line with a vertical line intersecting it, with labels 'Source', 'Use', 'Feasible', and 'End Use' at the intersections.</p>	<p>Brainstorm of solution ideas...</p>  <p>The diagram shows a brainstorming process. On the left, there are four horizontal rectangular boxes. Arrows point from each box to a central oval. Below the oval, there is a silhouette of a person's head with two thought bubbles above it, labeled 'Dual Thoughts'.</p>
<p>Synthesizing Ideas</p>  <p>The diagram shows four horizontal rectangular boxes on the left. Arrows point from each box to a central oval on the right, representing the process of synthesizing ideas.</p>	<p>Planning my designs/ solutions...</p> <p>Evaluating - which design is best???</p>
<p>14) Creating...</p> <p>My solution is...</p>	<p>15) Reflecting on my Journey</p> <ul style="list-style-type: none">•What have I learnt?•What problems did I face and what strategies did I use?•What was interesting and challenging?

Appendix 14: Long Term Plan

	Term 1	Term 2	Term 3	Term 4
2010	<p>Deeper Understanding(s): Understanding ourselves and others helps us to effectively participate, celebrate, and contribute to our world.</p> <p>Learning Disposition: Manage Distractions & my Reaction; Collaborate</p> <p>Context: "Out of Our Comfort Zone" – exploring through collaborative and setting up for year activities with a science- living world, social science and health/PE focus.</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Managing Self; Relating to Others; Participating & Contributing Social Studies Health & PE: PH&PD, ROP Science: Living World - Ecology 	<p>Deeper Understanding(s): Patterns and relationships help us make sense of the world around us.</p> <p>Learning Disposition: Thinking Critically, Reflectively; Take Notice</p> <p>Context: Science & Technology Inquiry/problem-solving with links to mathematics and social sciences</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Thinking; Using language, symbols and texts Science: physical & material world; investigating & communicating Technology: Technological practice & knowledge Mathematics: Statistics; Patterns & Relationships Social Sciences 	<p>Deeper Understanding(s): There are different attitudes, values, cultures and societies that people have.</p> <p>Learning Disposition: Be empathetic; be interdependent; Think creatively</p> <p>Context: Cultural connections & celebrations – prompted by Maori week; 26th July – working towards sharing different types of cultural celebrations/understandings through the Arts.</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Relating to others; Thinking Social Studies The Arts: UJ&InC, DPK, DJ, C&I Learning Languages: cultural knowledge 	<p>Deeper Understanding(s): Effective communication helps us participate successfully in our world.</p> <p>Learning Disposition: Actively communicate; Make Meaning; Be engaged</p> <p>Context: Communication & technological inquiry/problem-solving lead up to creating some sort of communication tool/strategy</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Using language, symbols & texts; Thinking; Participating & Contributing English: all forms Learning Languages: communication Social Studies
2011	<p>Deeper Understanding(s) We are responsible for our well-being and can influence other's well-being.</p> <p>Learning Disposition: Manage Distractions & my Reaction; Persevere; Be Interdependent</p> <p>Context: Setting up class for year... links to Health/PE, Technology, Social Studies – lead up to technological design around well-being (could link to pubertal change or keeping ourselves safe)</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Managing Self; Relating to Others; Thinking Social Studies Health & PE: PH&PD, ROP Technology: Practice, Nature of... 	<p>Deeper Understanding(s): The past helps us understand who we are, where we are and possibilities for the future.</p> <p>Learning Disposition: Emulate, Think Reflectively, Think Creatively</p> <p>Context: (provide links & context for TK cultural festival)- link to The Arts, Social Studies & Technology – inquiry and problem-solving for the future – presenting through the arts</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Managing Self; Participating & Contributing; Thinking Social Studies The Arts: All forms, especially UJ&InC, C&I Technology: Nature of..., knowledge 	<p>Deeper Understanding(s): Making connections with people around us helps us understand our world.</p> <p>Learning Disposition: Collaborate; Make Meaning; Be empathetic</p> <p>Context: Link to community & diversity; working towards some sort of collaborative inquiry/social decision-making presented with a focus on language.</p> <p>Curricula Links:</p> <ul style="list-style-type: none"> Thinking; Relating to Others; Using language, symbols & texts Social Studies English: all forms 	<p>Deeper Understanding(s): Our relationship with the environment affects our contribution to our world.</p> <p>Learning Disposition: Take Notice; Think critically; Be engaged</p> <p>Context: Environmental inquiry/problem-solving with links to Science – living world/planet earth & beyond (perhaps some sort of climate change project?)</p> <p>Key Competency & Curricula Focus:</p> <ul style="list-style-type: none"> Participating & contributing; Thinking Science: Living World/Planet Earth & Beyond Health & PE: HC&E Social Studies

Appendix 15: Figure linking Learning Dispositions with Deeper Knowledge and Productive Pedagogies – Example



(Example of Learning Disposition Development: Thinking Critically – Ana Matangi-Hulls,
9 December 2009)