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# Innovation in Education in 'Designated Character' Schools:

A case study of the directors of *Discovery 1* and  
*Unlimited Paenga Tawhiti*

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A dissertation submitted to the  
Faculty of Education, Griffith University,  
in partial fulfilment of the requirements for the degree of Doctor of  
Education.

March 2005

### **Signed Statement of Originality**

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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Cheryl Doig

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Date

## Abstract

This dissertation is a case study into participant perceptions of innovation in education. The participants in this research were four directors from two ‘designated character’ schools, which were set up to be foundationally different from traditional schools through opportunities to explore radical innovation. That is, both schools were conceptualised as sites for exploring radical rather than incremental change. The central questions asked in this study were - what makes for radical innovation in schools; and how is the use of ICT implicated in innovation in schools?

The literature review indicated that while there has been an increase in the information regarding innovation in education there has been little research into how this was being developed in non-traditional settings, or in ways that were radical. The role of ICTs in developing innovation was also reviewed, given that the two ‘designated character’ schools being studied had strong support for ICTs.

The main aims of this study were: to identify the features of radical innovation in schools; to explore the barriers against, and drivers for, innovation in schools; to provide insight into the use of ICTs to influence innovation in schools; to contribute to the literature regarding innovation in schools; and to identify future opportunities to innovate.

This study was a qualitative one, with symbolic interactionism as its theoretical underpinning. Data were gathered through the use of concept mapping, interviews and a focus group activity.

The findings of the study were that radical innovation in schools occurs when there is a cultural shift in the whole notion of schooling. This is difficult to achieve, even for schools that have been set up to be foundationally different. However, such schools can provide examples of some innovative practices that are ‘greenfields’. The use of ICTs, while not required for innovation, helps schools create innovative ideas, especially those ideas based around the needs of individual learners. There is a greater chance that this will lead to innovation being sustained. These findings have implications for policy makers to allow schools that are more innovative to try new ideas and to be supported to do so.

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## Table of Contents

Signed Statement of Originality .....	i
Abstract .....	i
Acknowledgements .....	ii
Table of Contents .....	iii
List of Tables.....	viii
List of Figures .....	ix
Abbreviations Used in this Thesis .....	x
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>NATURE AND PURPOSE OF THE STUDY .....</b>	<b>1</b>
Introduction.....	1
Emergence of the Research Questions .....	2
Purpose of the Study.....	2
Innovation - The Global Context.....	3
Driving forces that have influenced the establishment of these schools	5
Political Driving Forces .....	5
Cultural Driving Forces .....	6
<i>Sustainability of Innovation</i> .....	6
<i>Critical Mass</i> .....	7
Technological Driving Forces .....	8
The New Zealand Setting .....	10
The Local Context – ‘Designated Character’ Schools .....	11
The Establishment of <i>Discovery 1</i> .....	12
The Establishment of <i>Unlimited Paenga Tawhiti</i> .....	12
Significance of the Study – Developments in New Zealand.....	15
Assumptions and limitations of the study.....	17
Organisation of the Dissertation .....	19
Organisation within Chapters .....	20
Clarification of the Terms used in this thesis .....	20

Summary .....	21
<b>CHAPTER TWO.....</b>	<b>22</b>
<b>REVIEW OF THE LITERATURE .....</b>	<b>22</b>
Introduction.....	22
Innovation and related terms.....	23
Definitions of Innovation.....	23
Change Management and Innovation.....	24
Innovation, Invention, Entrepreneurship and Creativity.....	25
Summary.....	27
Theories of Innovation .....	27
A Rational Approach to Innovation in Education.....	27
An Organic Approach to Innovation in Education .....	30
Summary.....	34
The Extent of Innovation .....	34
Incremental v Radical Innovation.....	35
Summary.....	38
Information and Communication Technologies.....	39
Drivers and Barriers to Innovation.....	42
Internal Capacity .....	43
External Factors.....	45
Multiple Perspectives – Individual, Organisational and External.....	48
Summary.....	50
Conclusion .....	53
<b>CHAPTER THREE.....</b>	<b>55</b>
<b>RESEARCH DESIGN AND METHODOLOGY .....</b>	<b>55</b>
Introduction.....	55
Situational Analysis of <i>Discovery 1</i> and <i>Unlimited Paenga Tawhiti</i> .....	55
<i>Discovery 1</i> .....	55
<i>Unlimited Paenga Tawhiti</i> .....	57
Theoretical Framework Guiding the Study.....	58

<b>Research Questions .....</b>	<b>60</b>
<b>Guiding and Supporting Questions for Key Research Question 1 - .....</b>	<b>61</b>
<b>Guiding and Supporting Questions for Key Research Question 2.....</b>	<b>61</b>
<b>Research Design.....</b>	<b>62</b>
<b>Methodology .....</b>	<b>64</b>
<b>Data Collection and Analysis.....</b>	<b>66</b>
<b>First Phase .....</b>	<b>66</b>
<b>Second Phase .....</b>	<b>67</b>
<i>Concept Mapping .....</i>	<i>67</i>
<i>Semi-structured Interviews.....</i>	<i>69</i>
<b>Third Phase .....</b>	<b>71</b>
<i>Focus Group Discussion .....</i>	<i>71</i>
<b>Trustworthiness of Data.....</b>	<b>72</b>
<b>Ethical Considerations .....</b>	<b>74</b>
<b>Data Analysis .....</b>	<b>75</b>
<b>CHAPTER FOUR.....</b>	<b>77</b>
<b>REPORTING AND ANALYSIS OF FINDINGS.....</b>	<b>77</b>
<b>Introduction.....</b>	<b>77</b>
<b>Initial Meeting with Directors .....</b>	<b>77</b>
<b>Participant Interactions .....</b>	<b>80</b>
<b>Participant 1 .....</b>	<b>81</b>
<i>Concept Map .....</i>	<i>81</i>
<i>Interview .....</i>	<i>83</i>
<b>Summary of P1 Interactions .....</b>	<b>86</b>
<b>Participant 2 .....</b>	<b>87</b>
<i>Concept Map .....</i>	<i>87</i>
<i>Interview .....</i>	<i>89</i>
<b>Summary of P2 Interactions .....</b>	<b>92</b>
<b>Participant 3 .....</b>	<b>93</b>
<i>Concept Map .....</i>	<i>93</i>
<i>Interview.....</i>	<i>95</i>

<b>Summary of P3 Interactions .....</b>	<b>97</b>
<b>Participant 4 .....</b>	<b>98</b>
<i>Concept Map .....</i>	<i>98</i>
<i>Interview .....</i>	<i>101</i>
<b>Summary of P4 Interactions .....</b>	<b>103</b>
<b>Summary .....</b>	<b>104</b>
<b>CHAPTER FIVE .....</b>	<b>108</b>
<b>THEORETICAL PROPOSITIONS .....</b>	<b>108</b>
<b>Introduction.....</b>	<b>108</b>
<b>Participants' Views of Radical Innovation .....</b>	<b>108</b>
<b>a) Emerging Definition of Innovation in Education .....</b>	<b>110</b>
<i>Foundationally different.....</i>	<i>110</i>
<i>Repackaging .....</i>	<i>110</i>
<i>Professional Change .....</i>	<i>111</i>
<b>b) What Counts as Radical Innovation.....</b>	<b>111</b>
<b>c) Characteristics Needed to Innovate .....</b>	<b>112</b>
<b>Emergence of Theoretical Propositions .....</b>	<b>113</b>
<b>Proposition 1. Roles .....</b>	<b>116</b>
<i>Learning Advisers.....</i>	<i>117</i>
<i>Parents.....</i>	<i>118</i>
<i>Innovative People .....</i>	<i>118</i>
<i>Other Roles.....</i>	<i>119</i>
<b>Proposition 2: Student Role in Learning .....</b>	<b>119</b>
<i>ICTs for Individualised Learning .....</i>	<i>125</i>
<i>ICTs for Communication .....</i>	<i>126</i>
<i>ICTs Availability and Support Systems .....</i>	<i>126</i>
<b>Proposition 3: School Culture.....</b>	<b>127</b>
<b>Proposition 4: What Counts as Learning .....</b>	<b>128</b>
<b>Proposition 5: Structure.....</b>	<b>132</b>
<b>Unpacking the Propositions Further.....</b>	<b>134</b>
<b>CHAPTER SIX .....</b>	<b>142</b>

<b>CONCLUSIONS AND IMPLICATIONS .....</b>	<b>142</b>
<b>Introduction.....</b>	<b>142</b>
<b>Major findings of study .....</b>	<b>143</b>
<i>Radical Innovation in Schools.....</i>	<i>143</i>
<i>Barriers Against, and Drivers for, Innovation to Occur in Schools .....</i>	<i>144</i>
<i>The Use of ICTs to Influence Innovation in Schools .....</i>	<i>144</i>
<b>Contribution to the Literature on Innovation.....</b>	<b>145</b>
<b>Future Opportunities to Innovate .....</b>	<b>145</b>
<b>Implications.....</b>	<b>146</b>
<i>Implications for the Particular Schools .....</i>	<i>146</i>
<i>Implication for NZ Schooling .....</i>	<i>147</i>
<i>Implications for policy makers .....</i>	<i>148</i>
<i>Suggestions for future research.....</i>	<i>149</i>
<b>Conclusion.....</b>	<b>150</b>
<b>References .....</b>	<b>152</b>
<b>Appendix 1: Innovation and Best Practice Project (IBPP) research summary.....</b>	<b>165</b>
<b>Appendix 2: Ethical Considerations .....</b>	<b>166</b>
<b>Appendix 3: Coding definitions.....</b>	<b>168</b>
<b>Appendix 4: Notes from Peer Meeting .....</b>	<b>171</b>
<b>Appendix 5: Organisation of Focus Group.....</b>	<b>174</b>

## List of Tables

<b>Table 1: Stages in the Implementation of ICT (from Russell and Finger, 2004).....</b>	<b>9</b>
<b>Table 2: Creativity v Innovation .....</b>	<b>26</b>
<b>Table 3: Incremental and Radical Industrial Change .....</b>	<b>35</b>
<b>Table 4: Types of Innovation (Ellyard, 2002) .....</b>	<b>36</b>
<b>Table 5: Variables that Contribute to Technological Innovation in NZ .....</b>	<b>42</b>
<b>Table 6: Theoretical Framework Guiding the Study .....</b>	<b>59</b>
<b>Table 7: Research Design Overview .....</b>	<b>63</b>
<b>Table 8: Important Elements in Creating Concept Maps .....</b>	<b>68</b>
<b>Table 9: How will Trustworthiness be Achieved? .....</b>	<b>73</b>
<b>Table 10: Comparison of Codes by Participant.....</b>	<b>104</b>
<b>Table 11: Codes Categorised Under the Roles Heading .....</b>	<b>116</b>
<b>Table 12: Items Coded to Student Interests and Needs .....</b>	<b>120</b>
<b>Table 13: Initial ICT Codes .....</b>	<b>123</b>
<b>Table 14: Categories Coded to School Culture.....</b>	<b>127</b>
<b>Table 15: Items Coded to What Constitutes Learning .....</b>	<b>128</b>
<b>Table 16: Items Coded to Systems That Support and Sustain.....</b>	<b>133</b>
<b>Table 17: Identified Drivers and Barriers to Innovation.....</b>	<b>139</b>

## List of Figures

<b>Figure 1: The Establishment of Discovery Learning Schools in Christchurch .....</b>	<b>13</b>
<b>Figure 2: The Innovation S Curve .....</b>	<b>29</b>
<b>Figure 3: The Innovation S Curve for the Automobile.....</b>	<b>29</b>
<b>Figure 4: A Model of Fringe Developments .....</b>	<b>32</b>
<b>Figure 5: The Acceptance of Innovation .....</b>	<b>33</b>
<b>Figure 6: Conceptualising Theories of Innovation in Education .....</b>	<b>38</b>
<b>Figure 7: Conceptualising Innovation in Education and ICT Use.....</b>	<b>41</b>
<b>Figure 8: Initial Meeting Discussions .....</b>	<b>79</b>
<b>Figure 9: What is Innovation in Education? - Participant 1 .....</b>	<b>82</b>
<b>Figure 10: What is Innovation in Education? - Participant 2 .....</b>	<b>88</b>
<b>Figure 11: What is Innovation in Education? - Participant 3.....</b>	<b>94</b>
<b>Figure 12: What is Innovation in Education? - Participant 4.....</b>	<b>99</b>
<b>Figure 13: Summary of Radical Innovation Points.....</b>	<b>109</b>
<b>Figure 14: Theoretical Propositions.....</b>	<b>115</b>
<b>Figure 15: Traditional Schooling .....</b>	<b>121</b>
<b>Figure 16: Learning at UPT .....</b>	<b>122</b>
<b>Figure 17: The Role of ICTs in Innovation in Education .....</b>	<b>124</b>
<b>Figure 18: UPT Learning Model.....</b>	<b>130</b>

## Abbreviations Used in this Thesis

ACDE	Australian Council of Deans of Education
D1	<i>Discovery 1</i> , a ‘designated character’ primary school
DEST	Department of Education, Science and Training, Australia
DETYA	Department of Education, Training and Youth Affairs, Australia
EdNA	Education Network Australia
ERO	New Zealand Education Review Office
GEM	Global Entrepreneurship Monitor
IBPP	Innovation and Best Practice Project
ICTs	Information and Communication Technologies
NCEA	National Certificate of Education Achievement
NZ	New Zealand
NZLDT	New Zealand Learning Discovery Trust
NZEI	New Zealand Education Institute (Primary Teachers’ Union)
OECD	Organisation for Economic Cooperation and Development
P1	Participant 1
P2	Participant 2
P3	Participant 3
P4	Participant 4
UK	United Kingdom
UNITEC	University of Technology, based in Auckland, New Zealand
UPT	<i>Unlimited Paenga Tawhiti</i> , a ‘designated character’ secondary school
USA	United States of America

Note that, throughout this thesis, any references to the Ministry of Education refer to the NZ Ministry of Education.

# CHAPTER ONE

## NATURE AND PURPOSE OF THE STUDY

*The ultimate goal of educational reform must be to establish not just islands and archipelagos of improvement, but entire continents of change. (Hargreaves & Fink, 2001: 3)*

### Introduction

Chapter One provides an introduction to this dissertation, stating the purpose of the research, examining the key driving forces that have influenced the establishment of ‘designated character’ schools, outlining the emergence of the research questions and discussing the significance of the study. The global context relating to educational innovation is described, followed by an examination of innovation in New Zealand schools with specific reference to ‘designated character’ schools. Assumptions and limitations of the study are discussed and details regarding the organisation of the dissertation are provided. This includes information about the Chapter headings and formatting of the Chapters themselves.

This dissertation provides case studies focusing on the leadership of two schools that have been set up to have a particular focus on innovation and the use of information and communication technologies (ICTs). The two schools, called *Discovery 1* and *Unlimited Paenga Tawhiti* respectively, are situated in inner city Christchurch. *Discovery 1* (D1) is a full primary school<sup>1</sup> of approximately 200 students, and *Unlimited Paenga Tawhiti* (UPT) is a new secondary school, currently with just over 200 students. As researcher, I am interested in the perceptions of the schools’ leaders (directors) regarding how innovation is accomplished and what its effects are.

These two schools have been chosen because they represent a new move in New Zealand toward the creation of ‘designated character’ schools, as defined in this Chapter. They were the first two such schools established and, at the time of writing this dissertation, the only schools of this type in New Zealand, excluding Maori immersion schools. Having been involved in establishing these two schools I am interested in exploring the thoughts and opinions of the leaders of these schools to see what lessons can be learned. This will not only be useful for the further development of the schools

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<sup>1</sup> Catering for students from Years 0 - 8 (5 year olds to 13 year olds).

themselves, but also have implications for other schools, policy makers and researchers.

### **Emergence of the Research Questions**

The key research questions of the proposed study are:

- what makes for radical innovation in schools?; and
- how is the use of ICT implicated in innovation in schools?

In researching these questions, this study discusses the global context for innovation and identifies the political, cultural, and technological driving forces (Schwartz, 1991; OECD, 2001) that allowed the development of two ‘designated character’ schools in New Zealand, namely, *Discovery 1* and *Unlimited Paenga Tawhiti*.

Consequently, the study also examines those forces that help or hinder innovation. For example, the literature on innovation outlines a number of common features in innovation, such as the role of local, national and international trends in influencing innovation (Cuttance & the Innovation and Best Practice Consortium, 2001; O’Neill, 2000), the difficulty in sustaining innovation (Fullan, 2001a; Hargreaves & Fink, 2001), the importance of achieving critical mass (Gladwell; 2002; Kanter, 2001), the role of school culture in driving change (Fullan, 2001a; Stoll, Fink & Earl, 2003), and the use of ICT to drive innovation in new ways (OECD, 2001; Robinson, 2001).

The research questions also emerge from a closer look at the New Zealand context of schooling and the local setting in which the schools were established.

### **Purpose of the Study**

Using the information gathered through the literature review to inform this study, data on how the directors of two ‘designated character’ schools perceive innovation were collected. The main aims of this research are detailed in this section.

**1. To identify the features of radical innovation in schools.** Reflecting on the literature and using data obtained from the directors of these two ‘designated character’ schools, this dissertation investigates whether or not establishing schools set up to be innovative, and which should be foundationally different through their special character

status, are able to sustain the change and whether or not there are aspects of innovation which appear to be different from that possible or evident in conventional schools.

**2. To explore the barriers against, and drivers for, innovation to occur in schools.**

These may be internal to the person or school, or external in nature.

**3. To provide insight into the use of ICTs to influence innovation in schools.**

The study looks at how ICTs are used in these schools and how the directors perceive they contribute to innovation.

**4. To contribute to the literature regarding innovation in schools** and how it might be developed and sustained. While there is an abundance of research in the area of innovation in education, there are few case studies researching radical models of innovation in education. This research aims to provide a useful insight into how two schools have attempted to be innovative, thus contributing to the body of research in this area.

**5. To identify future opportunities to innovate.**

In exploring the implications of the findings for the case study schools, NZ schooling and for policy makers, there is opportunity to identify ways in which innovation might be fostered.

In order to frame the study, it is important to begin by investigating the forces that have led to the establishment of these schools, These are initially discussed from a global perspective, followed by a description of the New Zealand setting.

### **Innovation - The Global Context**

Since 1990, there has been a steady increase in the literature based on business innovation (Amidon, 1995; Cumming & Owen, 2001; Kuczmariski, 1996; Robinson, 2001; Rogers, 1998). During this time, schools have also experienced great change, as governments moved towards a model of public accountability (Codd, 1999; Lange, 1988; MacBeath, Moos & Riley, 1998). This period of rapid change has also increased the focus on innovation in education and the subsequent growth of the body of literature regarding innovation, change management and the future of schooling (Beare, 2001;

Fullan, 2001a, 2001b; OECD, 2001; Science & Innovation Advisory Council, 2001a, 2001b, 2001c; Spring, 2001; Rogers, 1995).

Fullan (2001b) believes that schools are witnessing a revival of large scale reform, last seen in the 1960s. In the late 1960s and early 1970s, open education provided one example of the alternative schools movement. Open schools provided active learning centres, self paced learning, team teaching and multiage grouping. After this, innovation and experimentation was overshadowed by the back to basics movement. The late 20<sup>th</sup> and early 21<sup>st</sup> centuries have seen the re-emergence of ‘character’ schools such as magnet schools, charter schools or schools of choice (Martin, 2000). Hargreaves (1997) believes this trend will accelerate, with heterogeneity replacing a uniform system, creating “an infinite variety of multiple forms of teaching and learning” (Hargreaves, 1997: 11). The ability to choose the school of choice, and to have a variety of learning opportunities, is fundamental to this study, as are the influences that are allowing this change to occur.

Increasingly, social, environmental, technological, political and economic changes are impacting on education, with school reforms being seen as “a product of the cultural, political and economic forces of their times” (O’Neill, 2000: 6). On the one hand, governments have sought increased public accountability, while on the other hand they have identified the challenges posed by ICTs, and the knowledge society (Butler, 2001; Beare, 2001; EdNA, 2000).

Globalisation is making the sharing of information easier and increasing the need for schools to be aware of global issues (Beare, 2001). At the same time, localisation is occurring, with more schools being encouraged to represent the unique needs of their communities. In this environment, more ‘character’ schools are being established and home schooling is rising. Character schools are defined as schools, which have been set up to meet a particular community need, with people choosing that type of schooling over other alternatives. This “relates only to how public education is governed at the macro level of politics, and not how the school approaches education” (Martin, 2000: 15).

In its discussion of *Schooling for Tomorrow*, the OECD (2000) reports that international globalisation has resulted not in converging systems of education, as might be expected

through the sharing of ideas, but in more diversity. Although strategies may be shared, countries have arrived at quite different solutions, creating greater differences.

The flexibility and individualisation inherent in the lifelong learning concept imply diversity not homogeneity. Today's "knowledge society" is placing an increasing premium on learning that may well cause differences in pathways and outcomes to be exacerbated, even while the pressures themselves are shared by all. In short, it might be mistaken to aim towards *the* school of tomorrow, if instead variety and diversity are on the increase. Whether the forces making for convergence or divergence prove to be more powerful must remain an open question (OECD, 2000: 13).

In the context of this study, New Zealand has allowed for more diversity in its schooling through legislative changes allowing for character schools, home schooling and integrated schools to be a greater part of the New Zealand educational scene.

## **Driving forces that have influenced the establishment of these schools**

### **Political Driving Forces**

Political driving forces are identified as the laws, government focuses, and local, national and international political decisions that affect our every endeavour (Schwartz, 1991). These impact on the level of innovation or conformity demonstrated in our schools.

The current NZ curriculum provides a disjointed and static framework that schools struggle to work within, and which does little to encourage innovative practice. Fullan (2001b) believes that "The main problem is not the absence of innovation in schools, but rather the presence of too many disconnected, episodic, fragmented, superficially adorned projects" (Fullan, 2001b: 21). The NZ Ministry of Education is currently reviewing the national curriculum, with a view to making curriculum more meaningful and integrated. This has the potential to be a driving force in educational innovation. However, tinkering at the edges can lead to innovation overload, so this may be an inhibiting factor. Fullan (2001b) considers overload to be worse for schools than businesses, because schools have the added complication of having accountabilities placed on them by bureaucracies. These bureaucracies are influenced by the demands of many stakeholders, as reflected in the following quotation:

Governments are not omnipotent and their influence is circumscribed by other spheres – parental demand, the media, decentralised and sometimes "deschooled" learning arrangements, social and economic circumstances. Learning takes place in many ways and settings that lie outside schools *per se*. All these different viewpoints, approaches and stakeholders should be entered into our reflections on the future of schooling (OECD, 2000: 10).

In order to establish any change at the systemic level, there needs to be support at the policy level (Wylie, 1998; Mitchell, Cameron & Wylie, 2002). Policy talk and policy implementation are very different. While the NZ Government has signalled an interest in developing innovation in NZ, the implementation of this policy in schools is not as apparent. This is discussed in more detail in the section *The NZ Setting*.

### **Cultural Driving Forces**

Cultural driving forces include those features of our society that shape us. In the school environment, cultural forces include the wider community environment but can also occur within the school setting. This study makes particular reference to sustaining educational change and achieving critical mass as strong cultural forces that can help or hinder change.

### *Sustainability of Innovation*

Sustainability of innovation is considered an issue in education, as it is for business (Hargreaves & Fink, 2001; Cumming & Owen, 2001). As Connell (1980) points out, "Frequently, worthwhile reforms have been proposed only to founder because teachers were inadequately prepared to put them into practice or the public were not ready to accept them. Inspiration has faltered in the face of inescapable routine" (Connell, 1980: 6). The literature on change management points to the difficulties of imposed change. This can alienate staff and disempower them (Clarke & Christie, 1997). Fullan (2001b) attributes lack of sustainability to a weak infrastructure to begin with. This implies that we need to focus on systems at the school, local and national (and increasingly global) level if change is to be sustained.

Hargreaves and Fink (2001) suggest that there are three things that matter about educational reform – depth, length (duration) and breadth. Depth refers to deep powerful learning that incorporates cognitive, psychological, social and emotional understanding. Duration refers to sustaining the change over time. Many innovations in education seem great at the beginning but evaluations "rarely follow change beyond the initial years of creativity and experimentation into the next phase" (Hargreaves & Fink, 2001:1). Breadth refers to efforts at large scale improvement that can be generalised. Hargreaves and Fink discuss the importance of beacon schools, and suggest that even those which may fail or revert to conventional structures (for example, when

restructuring falters) still help to reculture schooling because the staff leave and embed new ideas into other schools. According to Hargreaves and Fink (2001: 3), “The ultimate goal of educational reform must be to establish not just islands and archipelagoes of improvement, but entire continents of change”.

### *Critical Mass*

Before teachers can weave innovation into the curriculum and into their teaching practices, they need to understand innovation and entrepreneurship and have the opportunity to improve and enhance their own skills (Cumming & Owen, 2001: 8). Until this is achieved, critical mass will not be developed. The importance of critical mass is identified by a number of writers on innovation and change (Gladwell, 2002; Kanter, 2001). Gladwell (2002) refers to achieving critical mass as the tipping point, “that one dramatic moment in an epidemic when everything can change all at once...where the unexpected becomes expected, where radical change is more than possibility. It is – contrary to all our expectations – a certainty” (pp. 12-14). In education, we have not yet reached that tipping point where schools are more innovative and less driven by tradition, although some schools are more innovative than others.

There are many pressures for teachers and schools to be innovative and take part in new initiatives, but overload often means that, “innovations were adopted on the surface with some of the language and structures becoming altered, but not the practice of teaching” (Fullan, 2001b: 6). Even if innovation is adopted by individuals or groups, until critical mass is achieved the innovation will fail to make lasting change (Cumming & Owen, 2001).

“It is likely that the current use of information technologies and global interaction are generating shorter time-spans for the spread of knowledge about particular innovations, though perhaps increasing the hazards of technology-led innovations” (Robinson, 2001: 23). Robinson identifies that an ‘s curve’ for the adoption of interactive communication technologies tends to take more time to achieve critical mass, but once it reaches the tipping point, acceleration is faster. The ‘s curve’, referred to in the business literature on innovation, is also used in the education environment (Robinson, 2001). This can be used to identify typical adoption patterns of an innovation, allowing one to speculate when critical mass may be achieved. “The rate needs to reach between 10 and 20 per cent of the total (a ‘critical mass’) before the innovation takes on a momentum of its

own, at which point interpersonal and informal networks of communication among peers are influential in spreading information and value judgements” (Robinson, 2001: 21). A more detailed explanation of the ‘s curve’ appears in Chapter Two.

Critical mass is particularly pertinent to the growth of ICTs, their adoption and influence on society. The adoption of new ICTs, such as the Internet and mobile phone, has already had a significant effect on the abilities of schools to innovate. The growth of ICTs has the potential to change the whole nature of schooling.

Two observations or ‘Laws’ are critical for an understanding of this process. The first of these is Metcalfe’s Law, which states that the power of the network, on the WWW, equals the square of the number of users. As more people connect, the power becomes more valuable. In New Zealand, for example, there were 165,000 broadband subscribers by late 2004, mainly in the three main centres – Auckland, Wellington and Christchurch (Budde, 2005). As this number grows, the power and accompanying expectations increase and critical mass will be reached.

Until a critical mass of users is reached, a change in technology only affects the technology. However, once critical mass is attained, social, political, and economic systems change. This is what authors Downes and Mui call the Law of Disruption. It took about 10 years for radio to reach critical mass in the U.S.; television took longer. Each of these technologies transformed family, economic, and political structures once they reached critical mass (Boyd, 2004).

The second law that has a major role to play in critical mass is Moore’s Law. This law suggests that, every 18 months, processing power, storage capacity and network capacity double while costs hold constant (McCain & Jukes, 2001). If this is extrapolated, Bell and Gray (1997) predict that by 2047, computers will be at least 100 thousand times more powerful than at the end of the 20<sup>th</sup> Century. Thus, access to the WWW becomes a part of many people’s everyday life. This has massive implications for innovation and also relevance to the discussion around critical mass.

### **Technological Driving Forces**

ICTs are a major focus of this study because they have a significant influence on innovation in both education and business (ACDE, 2001; Beare, 2001; OECD, 2001). As well, there have been claims for the transformational potential afforded by ICTs. For example, the Australian Council of Deans (ACDE) argues that the “Technologies of

digitization have the potential to transform learning relationships” (ACDE, 2001: 3). Similarly, Russell and Finger (2004) suggest the transformative use of ICTs can be conceptualised by three overlapping stages of ICT implementation, as shown in Table 1. The stages utilise those described elsewhere by Dwyer, Ringstaff and Sandholtz (1991), and Kraver (1997). As the stages move from skill acquisition to enhancing teaching and learning, and finally to the transformative implementation of ICTs there is a shift from ICTs as an add-on, to ICTs as being pervasive and transparent.

**Table 1: Stages in the Implementation of ICT (from Russell and Finger, 2004)**

Stages of ICT Implementation	Example of Implementation	Conceptualisation
1. Skill Acquisition	Students learn basic computer components and functions and gain skills in applications such as word processing, spreadsheets and databases.	(Dwyer <i>et al.</i> , 1991) 1. Entry 2. Adoption ----- (Kraver, 1997) Wave 1: Early Adoption – “End of the beginning”
2. Enhancing Teaching and Learning	Students learn how to integrate ICTs within the existing curriculum.	(Dwyer <i>et al.</i> , 1991) 3. Adaptation 4. Appropriation ----- (Kraver, 1997) Wave 2: ICT Integrated Curriculum – “Buildup”
3. Transformative	Students are prepared for the ways in which schooling is changed by ICTs.	(Dwyer <i>et al.</i> , 1991) 5. Invention ----- (Kraver, 1997) Wave 3: Research based learning technologies are released and transform education – “Final Push”

One of the aims of this study has already been identified as examining how ICTs influence innovation. Stage 3 of ICT implementation is of particular interest to this aim as it is at this level that the potential for transforming education can be realised whereby ICTs become an integral component of the reforms, having the potential to alter the organisation and structure of schooling itself. This potential is also emphasised by DEST (2002) which reports that the potential of ICTs “has not been realised in any significant way, particularly the potential to transform how, what, where and why students learn what they do. While there are only limited examples of transformative power in the educational sector, experience from industry and other sectors clearly demonstrates that new times need new approaches, and that the nature and application of ICT enable that transformation” (DEST, 2002: 3).

In using ICTs to innovate, Kanter (2001) reminds us that, “The new challenges of the Internet Age increase the need for leaders who are masters of change” (p. 258). This study engages the leaders of the case study schools to understand what challenges they experience in the use of ICTs for promoting innovation. The use of ICTs and implications for innovation are discussed in more detail in Chapter 2.

### **The New Zealand Setting**

During the 1960s and 1970s there was a growth in interest in innovation in schooling. “For instance, the New Zealand Department of Education in 1971 initiated an annual series of publications on educational innovation, with *Innovations, Experiments and Projects in Primary Education*” (O’Connell, 2003).

Two state-funded alternative secondary schools were set up in the 1970s, Four Avenues in Christchurch and Metropolitan College in Auckland. These schools were placed under the governance of traditional state secondary schools and seem to have had no legislative power of their own. Auckland Metropolitan College closed its doors at the end of 2001. Vaughan (2001: 85) believes this was because, “Metro’s ability to remain at the cutting edge of schooling was compromised by changes to, and gaps in, education policy.” She highlights the need for further research into alternative education – research that does not just consider alternative schooling as a ‘second chance’ option or a last resort for educating at-risk students. The importance of these schools is that they were the pre-cursors to the establishment of the two schools that form part of this study. Following alternative schools in the UK and USA these schools “were based on ideals about active learning, recognition of individual differences between students, cooperative class planning by teachers and students, and an attempt to make learning at school more directly related to “real life” outside the school” (Vaughan, 2001: 88). However, by the mid-nineties the school had “two distinct groups of students – the non-conformists and the at risk” (Vaughan, 2001: 91) and this tension between the distinct needs of the groups eventually led to the school’s demise. One of the ongoing difficulties was the continued ERO Reviews, which looked at the school under the need to deliver mainstream requirements.

Interestingly, the Ministry of Education suggested that Metropolitan College close and apply to be re-opened as a ‘special designated character’ school, using the legislation that eventually was to lead to the approval of *Discovery 1* and *Unlimited Paenga*

*Tawhiti*. The school did not take up this offer due to mistrust of the Ministry (Vaughan, 2001).

There has been a resurgence in alternative schools throughout the world. Some of these sound similar to UPT. For example, Minnesota New Country School was established to meet the needs of the community where there were limited other options for students who were motivated to learn in an informal, interests based setting. The intake came from some children with ICT interests, home schoolers and alternative families (Rofes, 2000).

Since 1989 there have been a number of new initiatives in NZ education. However the history of alternative schools has, as in most parts of the world, met with limited success in terms of sustainability.

### **The Local Context – ‘Designated Character’ Schools**

Both ‘character’ schools, and home schooling, have grown in New Zealand, especially since 1989, when *Tomorrow’s Schools* (Lange, 1988) resulted in a complete revision of New Zealand’s education system, allowing schools to be self managing and to better reflect the needs of their communities. As part of these far-reaching changes, the *New Zealand Education Act 1989* (NZ Government, 1989) was revised. The NZ Education Act 1989, Section 156, created the ability to apply to the Secretary for Education to establish a ‘designated character’ school. In establishing such a school, the Minister of Education needed to be satisfied that:

- (a) The parents of at least 21 people who would, if the school were established, be entitled to free enrolment there, want the school to be established; and
- (b) The parents want the school to have a character that is in some specific way or ways different from the character of ordinary state schools; and
- (c) The parents have given the Minister a clear written description and explanation (expressed in the form of aims, purposes, and objectives for the school) of the way or ways; and
- (d) Students at a school with such a character would get an education of a kind that -
  - (i) Differs significantly from the education they would get at an ordinary state school; and
  - (ii) Is not available at any other state school that children of the parents concerned can conveniently attend; and
- (e) It is desirable for students whose parents want them to do so to get such an education (NZ Government, 1989: 340).

This section of the Act was not used until the establishment of *Discovery I* in 2001.

### **The Establishment of *Discovery 1***

In 1998, the *NZ Learning Discovery Trust* (NZLDT) was established by a group of local parents, principals and business people. Its objective was to look for ways of establishing different schooling opportunities for children within the state school environment. Initially, a Discovery Learning classroom was established at Elmwood School, in Christchurch. However, it soon became apparent that such a system was difficult to maintain within the traditional school environment. As a result, the Trust decided to apply to the Minister of Education to set up a ‘designated character’ primary school, under Section 156 of the *New Zealand Education Act 1989*.

Although the Ministry of Education had a great deal of experience in opening new schools, there had been few new schools in Christchurch in recent years. The lack of experience was compounded by the fact that no ‘designated character’ schools had been opened under Section 156 of the Act. This hampered progress and there was uncertainty whether the school would ever be approved at all. However, the application was finally approved after two years of negotiations, and the school opened its doors for the first time in May 2001. The school, *Discovery 1*, occupying three floors of an inner city office block, was made up largely of open areas and variable working spaces; and featured high levels of information technology access. The focus was on:

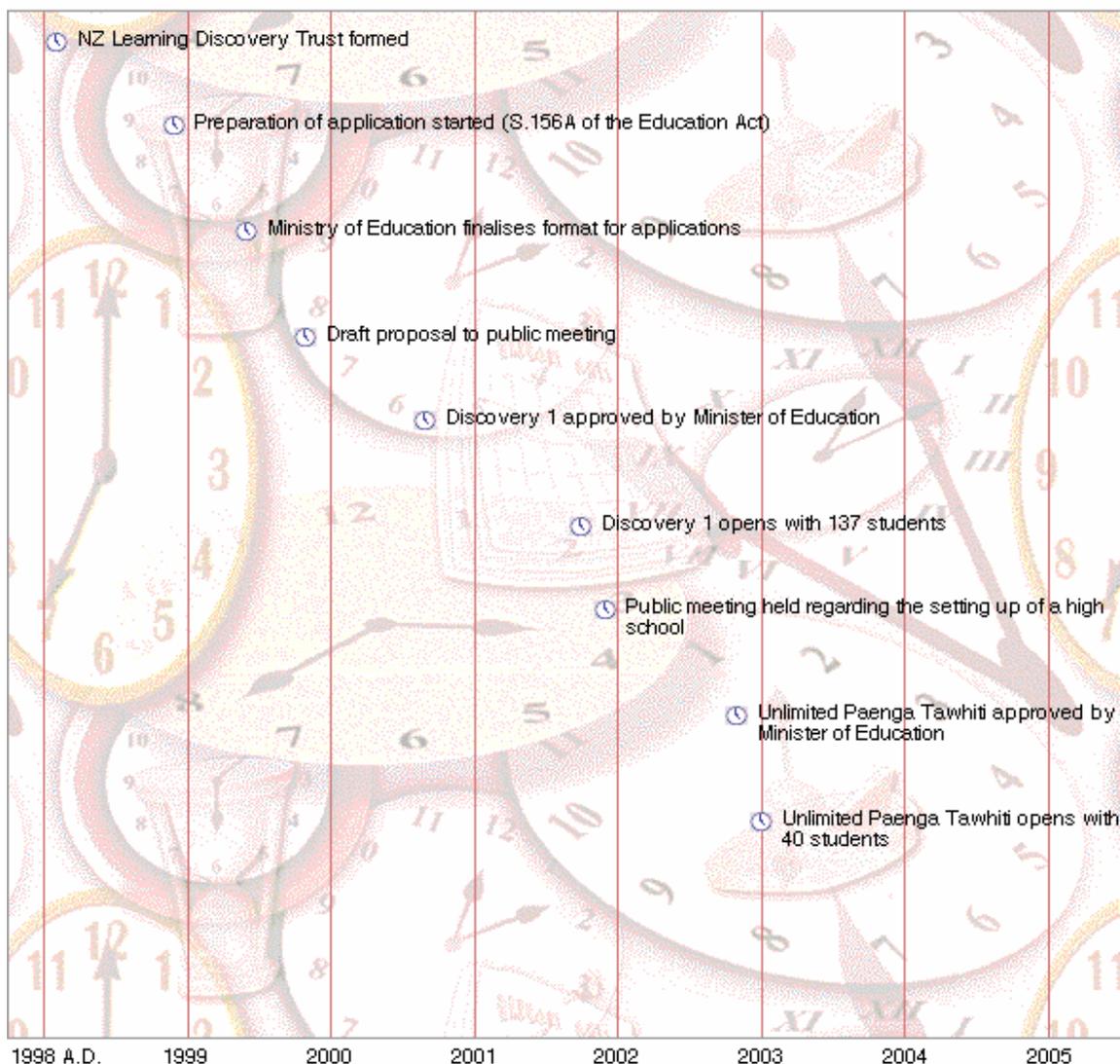
The ‘Discovery Learning’ approach which allows the child considerable freedom to follow his (sic) own passions and to build around those interests...child directed learning...individual learning contracts...class groups spanning ages...the school as a learning base only ...and the use of the whole community for learning (NZLDT, 2000).

### **The Establishment of *Unlimited Paenga Tawhiti***

In December 2001, the NZLDT submitted an application to establish a ‘designated character’ secondary school in Christchurch. Formed along similar lines to the primary school, and located in the heart of the central business district of Christchurch, the secondary school aimed to “foster innovation, entrepreneurial skills and science and technology” (NZLDT, 2001). This school, *Unlimited Paenga Tawhiti*, was approved by the Minister of Education, and began operating from the beginning of the 2003 school year.

A summary of the development of these two schools is shown in the timeline presented in Figure 1 on the following page.

# Timeline



**Figure 1: The Establishment of Discovery Learning Schools in Christchurch**

Both schools, as state schools, were required to comply with the *New Zealand Education Act 1989* and subsequent amendments, and were staffed and funded as for any other state school. The schools were run by one or more directors (principals) and staffed by learning advisers (teachers). The terminology was deliberately chosen to reflect a new way of thinking, where power was shared with students and where staff had an advisory role rather than ‘teaching’ in a traditional sense. This was not an attempt to downplay the importance of their role, but to indicate a move away from a model of teaching and learning, which focused on direct instruction and a curriculum-

centred approach, to a model that provided flexible modes of delivery with individual student needs at the centre.

The primary school employed one director, and the secondary school appointed three co-directors. The directors of these two schools had all been principals in traditional schools before being appointed to their directors' positions. Both schools had a focus on individual learning programmes, use of the community, and innovation. These schools also had ICT rich environments, with a particular emphasis on mobile technologies. Parental and community involvement in these schools was higher than in most traditional schools. By the beginning of the 2004 school year, the primary school had grown from 150 to 200 students, which was its maximum enrolment capacity. *Unlimited Paenga Tawhiti* had a roll of 115 students, with the expectation that it would reach 400 by 2006.

The schools were founded on common understandings guided by the foundational document, which was approved by the NZ Ministry of Education. A proposal to the Ministry outlined the following key features of Discovery Learning as follows:

The school will be based on the concept of "discovery learning". This involves:

- encouraging children to experience learning as a joy;
- keeping the wonder of learning;
- everyone learning and everyone teaching;
- small groups of learners across ages;
- strong parental and community involvement;
- children directing their own learning in collaboration with their teachers and parents; and
- allowing children to follow the learning paths they are passionate about, or interested in, and by following their individual interests to take quite different pathways to the requirements of the National Curriculum (NZLDT, 1999).

Although the schools were based on common understandings, as established by the special character, they work in quite different ways from one another. Both founding documents make constant reference to the need to innovate and encourage innovation. However, as the two schools proceed in their innovative approaches, some divergence might be expected to occur. Trust members believe that this divergence is important, in that each new school should have its own flavour. This will vary according to such factors as the leadership of the schools, the length of time the schools have been open, the age level of the students and the mix of staff, students and parents who make up each community.

It is within the context of these two ‘character’ schools, which focus on institutional innovation, that this research takes place.

### **Significance of the Study – Developments in New Zealand**

As in other parts of the world, in New Zealand there is an increasing focus on innovation and entrepreneurship in education, with attempts to encourage innovation and creativity in schools (Frederick & Carswell, 2001). Treadwell (1997) comments that in the past, New Zealand innovation and entrepreneurship have often been stumbled across by trial and error. The introduction of the New Zealand Technology Curriculum document, which focused on creativity and innovation, he saw as, “...the first concerted effort to empower our students to be innovative and independent, reinvigorating the concept of kiwi ingenuity” (Treadwell, 1997: 9). This reflects a growing recognition that, if New Zealand is to compete globally, the government needs to provide policies and guidelines for implementation of innovation (Science and Innovation Advisory Council 2001a, 2001b, 2001c).

Since 1999, more resourcing has been allocated to innovation (Butler, 2001; NZ Ministry of Education, 2003). In 1999, the *Innovations Funding Pool* was established as a contestable pool of money that schools could apply for. However, this related specifically to the introduction of innovative programmes for raising the educational achievements of students who were considered to be at risk (Clinton, 2003). In 2003, the Ministry of Education launched a *Collaborative Innovations Fund*, which provided the opportunity for schools, tertiary institutions and early childhood facilities to undertake innovative projects together (NZ Ministry of Education, 2003). The emphasis was on developing networks and partnerships to improve students’ learning, allowing for greater student interaction between schools, cultures and different types of situations; and on becoming self funded within three years.

There has also been an emerging national approach in the use of ICTs in schools. In 1999 principals attended ICT planning workshops and schools were required to complete an ICT plan in order to receive extra funding for ICTs. Since then, many schools have accessed funding for ICT professional development and network infrastructure (Ministry of Education, 2002). The Ministry has also facilitated national contracts for software and ongoing national conferences focusing on ICTs and learning.

It is within this new focus on innovation and ICTs that the two schools were established. This research is strategic in that it can inform the future and direction of any other ‘designated character’ schools that may be established. This research will help construct meaning regarding innovation in education, using the schools studied, and clarify what helps and hinders an innovation. Importantly, this research examines the dimensions of ICT use in these innovative schools.

Other research has been undertaken into the emergence of learning in these schools, but has yet to be published. In an unpublished paper by the University of Canterbury, O’Connell (2003) discussed the position that innovative schooling has occupied in the state primary education system in New Zealand. O’Connell’s research looked at an innovative NZ school of the 1950s, Oruaiti, and made comparisons between it and *Discovery 1*, discussing the position of innovative schooling in NZ. One of the points highlighted in this work was that innovation at Oruaiti was driven by practitioners, while “*Discovery 1*’s curricula are being generated by a diverse range of people including parents” (O’Connell, 2003: 5). The special character of the school was developed by the NZLDT, before teachers had been employed. The new research undertaken here explores the notion of who drives the innovation and its effect on sustainability of the change in more detail. It is important to delve further into any tensions that may arise due to the ‘ownership’ of the innovation.

The previous research also indicates that there are tensions at policy level between the original vision for D1 and the reality of operating as a state school, with the same funding, staffing and expectations. O’Connell suggests that the ability of the school to prosper and innovate will depend on its ability to overcome the limitations of operating as a state school, in such areas as following a national curriculum, compliance issues, funding and staffing. He also notes that while the school set out to have more involvement from parents, this has yet to be realised (O’Connell, 2003: 11). In exploring the drivers and inhibitors of innovation my research further explores the effect of these tensions and whether they have a major effect on innovation.

Further unpublished research undertaken at *Unlimited Paenga Tawhiti* (O’Connell, 2004) focused on the voices of the students, parents/caregivers and learning advisers,

but not the directors of the school. O’Connell makes no reference to the directors nor do the participants make any explicit reference to the leaders of the school.

The research being reported here adds to the research on these two ‘designated character’ schools by focusing on one particular stakeholder group – the directors. It is acknowledged that school leaders play an important role in change management (Fullan, 2001a). This has also been acknowledged in new initiatives developed by the NZ Government. The 2001 Budget contained “a significant investment in school principals, as part of the Government’s commitment to improving the quality in schools” (NZ Budget, 24 May 2001). There was money set aside to provide career-long professional development for principals. This included the allocation of laptops for principals, the establishment of a principals’ development and leadership centre; and professional development programmes for aspiring principals, first time principals and experienced principals. It also included the development of Leadspace (see <http://www.leadspace.govt.nz/>), a digital portal for school leaders.

In a period of time when the NZ Ministry of Education is focused on increasing principal expertise and on exploring more innovative approaches to education, there is a need for research on innovative practice, especially the influence of school leaders on this innovation. This research provides a critically important role in guiding innovation in NZ.

### **Assumptions and limitations of the study**

This study is based on the following assumptions:

- innovation can result in positive, sustainable change.
- new times need new approaches, involving changing the structure of schooling;
- in creating new learning environments ICTs improve the design and creation of innovation;
- there are potentially transformational educational benefits afforded by new and emerging ICTs; and
- educational policies and practices need to promote a culture of innovation.

A limitation of this study is that, as it applies to only four directors of ‘designated character’ schools, it is difficult to generalise findings to other schools. However, a

variety of data gathering techniques make the information gained as useful as possible in informing other innovative initiatives in schools.

Furthermore, as researcher, I am also involved in, and have pre-conceived ideas about, the schools. To counter the potential limitation of bias methodologically, I have involved the four directors as active participants in the research process, and also used two external people to verify data codings and findings.

As a member of the board of both of these schools, my role may have influenced what the participants were prepared to share with me. The environment in which the research took place is 'high risk' in that there is uncertainty and the environment is characterised by negotiations as challenges are responded to and created. These factors meant it was even more important to have strong relationships with, and explicit expectations of participants. This was discussed openly with the participants. They were happy to deal with any conflicts or concerns, if the need arose, by negotiating a way forward and they also knew that they could withdraw as a safeguard should they feel uncomfortable or at risk.

On a personal level, one of the limitations was that I was, and continue to be, a fulltime school principal at a traditional primary school in the same city. There was limited time to spend in the schools and time taken generally was 'after hours' or for meetings rather than regular observations. Time committed to the schools is often at the Board level. While this did give good insight into the governance and management of both schools it also meant there was less time to interact with the environment and the people in it. Since the research focused largely on the perceptions of the directors, with whom I had ongoing working relationships, this limitation was largely addressed. Time commitments to undertake the research were also been partially addressed through the granting of 12 weeks study leave during the 2004 school year. This NZEI Study Award enabled me to have greater access to the sites and engagement with the collection of data and its processing.

Details of any limitations related to particular research instruments and techniques are listed in the Methodology section of this study, in Chapter Three.

## **Organisation of the Dissertation**

This dissertation is organised into six Chapters, as detailed below.

### **Chapter One – Introduction**

As has been seen, Chapter One introduced the purpose and significance of the study. It set out to explore how the research questions were developed, key contributing factors and the framework in the New Zealand setting.

### **Chapter Two – Review of the Literature**

This Chapter provides more detail regarding the context for the research and discusses key definitions used in the study. It explores two different models of innovation; and examines the extent of innovation and how this can be interpreted.

### **Chapter Three – Research Design and Methodology**

Chapter Three outlines the research design and theoretical framework of the study. From this the methods used for three phases of data gathering are examined. Trustworthiness is an important element of this research and it is discussed in this Chapter, along with comments on ethical issues that need to be considered. Finally, the methods of data analysis are outlined.

### **Chapter Four – Analysis of Results**

This Chapter describes the way the data were collected over a six month period. It shows results obtained from the initial meeting. It also provides details of the concept mapping exercise and interviews with each director. Firstly, information is given from each participant separately, then general findings are discussed and summarised.

### **Chapter Five – Theoretical Propositions**

This Chapter discusses the emerging findings related to a definition of radical innovation in education. It also clusters main findings into five theoretical propositions regarding innovation in education. Initial findings are checked with the participants and any subsequent changes made as a consequence of the focus group discussion are noted.

### **Chapter Six – Conclusions and Implications**

This final Chapter summarises the study in terms of lessons to be learnt and how the research results might be used. It also identifies any future areas for study, problems that this research has highlighted and implications for the future.

### **Appendices**

The Appendices contain examples of memos, coding and working documents used during the process of this study. They also include forms used for ethics approval and various other documents used as part of the studies.

## **Organisation within Chapters**

Each Chapter begins with a quotation that illustrates the understandings obtained during the study. The software programme *Inspiration* is used extensively to produce concept maps to help explain an idea or clarify meanings for the researcher and the reader.

## **Clarification of the Terms used in this thesis**

Terms used in this thesis have been defined as part of the literature review in Chapter Two. However, some terms have already emerged which need defining:

ICTs refer to information and communication technologies that are widely used in school settings. These include computer hardware and software; telephony; the internet and email; photocopying and scanning equipment; and digital cameras and video.

‘Designated character’ schools are those that have been set up under the NZ Education Act 1989, Section 156 as schools having a character that is specifically different from the character of ordinary state schools. A number of schools following a Maori kaupapa<sup>2</sup> have been set up as ‘designated character’ schools but the two case study schools are the only other approved as ‘designated character’ schools.

Innovation is discussed from many perspectives in this study. The definition supported through this dissertation sees innovation as an organic, messy and complex process where positive, deep and cultural change is sustained. This relates more to organisational innovation than innovation as an individual activity. The innovation literature is examined further in Chapter 2, providing a number of different definitions, perspectives and related terms.

While New Zealand readers may have a shared understanding of the ideas and terms presented in this study, they may be less well understood by readers from other international contexts. Every effort has been made to explain any terms that may have particular meaning in the New Zealand setting. To assist, abbreviations used in this thesis are listed earlier (see p. x).

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<sup>2</sup>Following traditional guidelines of the iwi or tribal group.

## **Summary**

Accompanying an increased interest in innovation internationally has been an increase in the rhetoric about the need to innovate in schools. In New Zealand, two ‘designated character’ schools, which could focus on innovation from a radical, or institutional, perspective, were established.

Following the articulation of the key research questions, and a description of those two schools, the significance of this study was established. The organisation of the thesis was discussed in order to set the framework for this dissertation.

Chapter Two presents a review of the literature on innovation, identifying key theories of innovation and establishing how these relate to the work of the two schools being studied. The role of ICTs in transforming education is also explored.

# CHAPTER TWO

## REVIEW OF THE LITERATURE

### Introduction

As outlined in Chapter One, the key research questions guiding this study focused on innovation in two New Zealand ‘designated character’ schools established to promote innovation. More specifically, the study focused on the directors of those two case study schools to examine whether or not the intended innovation actually worked in the ways intended. The key research questions were:

- what makes for radical innovation in schools? and
- how is the use of ICT implicated in innovation in schools?

Chapter Two presents a review of the literature for the purposes of conceptualising the framework for this study. This Chapter is divided into six sections.

Section One outlines the varied definitions of innovation and how innovation relates to terms that are often linked with it –change management, invention, entrepreneurship and creativity. Section Two contrasts the technical-rational approach to innovation with the creative, chaos oriented approach. Section Three explores the extent to which innovation occurs, from an incremental level to a more radical extent. These three sections provide a greater understanding of innovation and what this might mean in the context of this study.

Section Four reviews the role that ICTs might play in the process of innovation. ICTs are explored as a contributing force to innovation, in terms of claims being made that ICTs have the potential to influence the organisation and reform of schooling (Commonwealth Department of Education, Science and Training (DEST), 2002).

Section Five looks at the drivers and barriers to innovation and begins to identify some of the most common features which may emerge from discussions with the participants of this study. The concluding section discusses the importance of the literature for this research study.

## **Innovation and related terms**

### **Definitions of Innovation**

As discussed in Chapter One, the focus on innovation has increased and consequently a varying number of definitions of innovation have emerged. These include definitions such as “Innovation is the collateral of human creativity: it is the capacity to create options for the future. Strategic innovation involves assembling new combinations of resources which create productive possibilities for a sustained period of time” (Clarke and Clegg, 1998: 224). The notion of new ideas is evident in some definitions, as in Kanter’s:

Innovation refers to the process of bringing any new, problem-solving idea into use. Ideas for reorganizing, cutting costs, putting in new budgeting systems, improved communication, or assembling products...are also innovations. Innovation is the generation, acceptance, and implementation of new ideas, processes, products, or services (Kanter, 1983: 20).

There are also definitions that are more general and outline the characteristics needed to be innovative. For example, Kuczmariski (1996) suggests that “Innovation is the ability to look forward, to exude passion about the future, to be curious, to be contrarian, and to think about the present from different perspectives” (p. 24). Other definitions are more general still and provide no guidance for those wishing to move towards innovation, such as Nystrom’s definition that “Innovation refers to the creation of the future” (Nystrom, 1998: 75) and Buck’s<sup>3</sup> definition of innovation as “...the ability to wonder and the courage to try.”

The literature divides innovation in many different ways. Clark & Clegg (1998) establish the following types of innovations:

- adding value to existing products and services;
- large organisations finding ways to act like smaller more flexible organisations;
- use of information technology;
- structural and operational changes eg self managing teams; and
- extending markets into new countries or new sectors.

Definitions fall into two main categories, namely, those that focus on a rational technician view involving process and products; and those that focus on the creativity of people, thinking processes and passion. This highlights two distinct approaches to

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<sup>3</sup> Ex-mayor of Christchurch and a member of the Science Innovation Advisory Council

innovation. These two approaches are discussed in more detail in the section on *Theories of Innovation* (see p. 27).

In studies of innovation, some researchers have divided innovation into parts that should all be present if innovation is to thrive. The four pillars of innovation identified by the Conference Board of Canada (Watt, 2002) highlight the importance of leadership, structures and processes; cultures and climates; and people. If innovation is to be organisational, “It involves all areas and all aspects of an organization or institution in order to be realized” (Watt, 2002: 5), as compared to an add-on programme or what is happening in a few areas of a school. Their research looks not just at whether or not the outcome was innovative but, “include what fundamentals are needed to enhance the ability to innovate - for example, the skills, attitudes and behaviours of individuals and teams, the leadership qualities of an organization or institution, and the physical and social working environment in which people function” (Watt, 2002: 8). This recognises that interactions and perceptions provide a key part in any innovation. This is consistent with the approach adopted in this study using symbolic interaction.

### **Change Management and Innovation**

The role of change in the innovation process is an important one for helping to clarify the meaning of innovation. Kanter (1977) differentiates between three types of change that are useful in a discussion on innovation. These are as follows:

1. Change projects:

These are “discrete, specific streams of action designed to address a particular problem or need.” If the results are to have a lasting impact then they cannot be stand alone projects that fall outside the mission of the company.

2. Change programmes:

These are “interrelated projects designed to have a major cumulative organisational impact”. To be successful projects need to link in well together and to whatever else is happening in the company.

3. Change adept organisations:

These are “investments that create the capability for continuous innovation and improvement, for embracing change as an internally desired opportunity before

it becomes an externally driven threat, by mobilising many people in the organisation to contribute (Kanter, 1977: 4-5).

Change adept organisations allow systemic innovation, rather than just tinkering at the edges of reform. They provide structures and systems that support innovative thinking. While continuous improvement is seen as important, innovation is recognised as being crucial for the forward momentum of the organisation. While all innovations lead to change, not all changes are innovations. Change is a process of altering the form or function of a person, a thing, or a system; systemic change comes about slowly. Clearly, systemic change is far more difficult to implement than piecemeal change efforts or localized efforts to implement an innovation. To involve systemic innovation suggests a more radical approach and one that creates something new, rather than just implying change.

The next section highlights some other terms used commonly in association with innovation.

### **Innovation, Invention, Entrepreneurship and Creativity**

Other keywords used in conjunction with innovation are invention, entrepreneurship and creativity. This section explores the relationships between these terms. In New Zealand there are a growing number of opportunities for innovation and entrepreneurship. Universities in the main centres have innovation divisions – in the form of qualifications, business incubators and entrepreneurial partnerships. One such centre, based at UNITEC in Auckland, describes an entrepreneur in the following terms: “An entrepreneur is a person who habitually creates and innovates something of recognized value around perceived opportunities” (New Zealand Centre for Innovation and Entrepreneurship, 2001). ‘Habitually’ is a key word, in that entrepreneurs are often serial entrepreneurs.

Senge differentiates between invention and innovation, saying that innovation only occurs when an invention can be “replicated reliably on a meaningful scale at practical cost” (Senge, 1990: 6). Until this has been achieved there may be a great deal of potential, but that potential has not yet been realised in practice. The lack of follow through from invention to innovation was identified by Frederick and Carswell (2001), in their *Global Entrepreneurship Monitor* (GEM report). They saw this as a particular

problem in New Zealand, where there are many attempts to start entrepreneurial businesses but a low survival rate. The writers of the GEM report found that New Zealand had one of the highest rates of innovation but had a low rate in entrepreneurship education. This highlights the need to focus on sustainability of innovation and the training and support to do this.

The importance of application is also highlighted in the discussion on creativity and its relationship to innovation. The Innovation Network (see [www.thinksmart.com](http://www.thinksmart.com)) differentiates between creativity and innovation, saying that in the past businesses focused on the development of creative ideas that were not necessarily followed up on. While creativity is finding, thinking up and making *new* things; innovation is about doing and using *new* things. The Innovation Network identifies a change in approach to innovation over the last year and a half, as shown in Table 2. This shows innovation as being accessible to a greater number of people, with distance no longer being a barrier.

**Table 2: Creativity v Innovation**

Old 'Creativity' Approach	New 'Innovation' Approach
•Physical centre	•Virtual resource taken to the business units
•Focused on ideation	•Focused on business strategy and developing breakthrough products
•One 'champion' with a budget	•Many 'clients' buying services
•Process experts	•Process and business experts
•Training and facilitation	•Broader range of offerings and coaching

The “New ‘Innovation’ Approach” shows an increasing emphasis on taking the ideas through to implementation, a focus on a wider audience, and the use of technology to distribute ideas to that audience. An entrepreneur is someone who “conceives or receives ideas and turns them into business realities, often using other people’s brains and/or money” (Adder, 1996: 13). Intrapreneurship is another term that is referred to in the innovation and entrepreneurship literature. Intrapreneurship relates to the entrepreneurship *within* an organisation (Gilbertson *et al*, 2001).

## **Summary**

This introduction to innovation and associated ideas helps to clarify what innovation is all about. Although change management and innovation are sometimes used interchangeably this study is based on the literature which suggests that all innovation requires change, but not all change is innovative. Innovation involves the *implementation* of a *new* idea, invention or creation. The ability to follow through is necessary if the innovation is to be sustained. The focus on innovation for this study also looks at innovation from a systemic approach, rather than the participants themselves as entrepreneurs. This approach involves greater participation, as explored in the next section.

## **Theories of Innovation**

Two main bodies of innovation theory exist. These are the rational technicist approach, and organic, chaos theory approach. These two models of innovation are compared by Robinson (2001) as being linear and convergent respectively. Linear refers to “rational planning and a one-way view (usually top down) of communication” favoured by bureaucratic societies and institutions (Robinson, 2001: 21). This approach uses Taylorist thinking, which focuses on economic theory, bureaucracy and reductionism (Peters & Waterman, 1982). In contrast, a convergence model involves greater participation and shared decision making, which can make it appear “messier and more *ad hoc* than the linear model, running the risk of losing direction through generating wider ownership of the change” (Kanter, 2001).

## **A Rational Approach to Innovation in Education**

In education, the rational technicist approach to innovation is exhibited where:

...learning is just the acquisition of very specific skills and bits of knowledge, a process that is linear, incremental, measurable. It says the learner should progress from step to step in a predictable sequence, interrupted by frequent testing and reinforcement, with each step getting progressively more challenging (Kohn, 2000: 4).

This rational approach to education is supported by market driven economic theory. Government policy in Western countries has focused on this application of market theory to education (Dempster, 1997). Accountability, competition and improved performance have encouraged schools to become more efficient, but at some cost to innovation. In the USA, there has been a ‘back to basics’ move that has provided directives regarding the way students and schools are evaluated. A survey published in

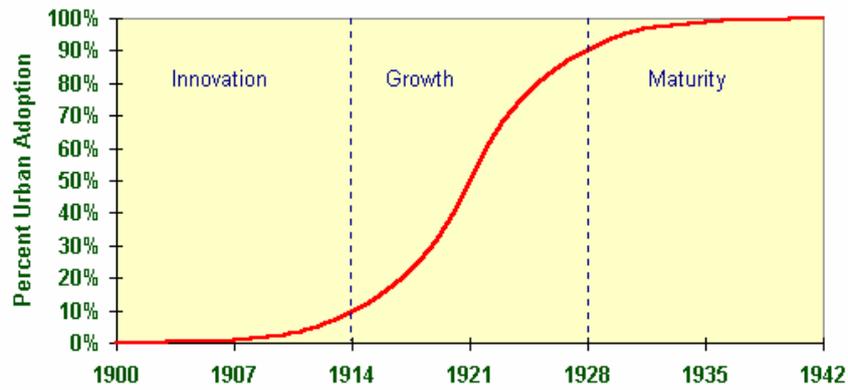
1997 indicated that “politicians across the country have ‘pushed to set aside innovative approaches to assessment and to return to commercially available, norm-referenced tests’” (Kohn, 2000: 9).

This return to things measurable and linear is not just an American phenomenon. In 2001, the first New Zealand Knowledge Wave Conference, in Auckland, was attended by a selected group of academia and business people. In his report on the conference, *Unlimited* Editor, Vincent Heering, summarized the need for change to happen in our schools as follows: “Another widespread area of agreement was the need to reverse our experiments with exam-less schooling and return to measurable benchmarks for kids right through the education systems” (Heering, 2001: 8).

Economic theories describe innovation in a linear, scientific fashion using the innovation curve to explain how innovation occurs. Long wave theory, also known as the Kondriatev wave, “proposes that the world economy displays a rhythmical pattern, as a rapid expansion and stagnation period alternate with a periodicity of around about fifty years” (Clarke & Clegg, 1998: 11). During the growth period, clusters of innovation group together, leading to strong economic growth. This growth tails off until further discontinuous innovation restarts the whole cycle.

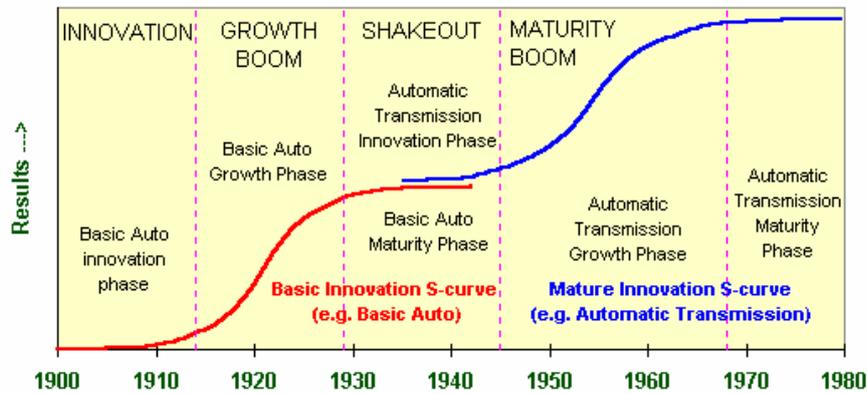
This model of innovation is based around the world economy. It is predicted that we are due for a new up wave, as “The convergence of communications and computer technology, combined with rapid advances in other generic technologies, including bio-engineering, materials, energy and space technology, is helping to create an exploding cluster of discontinuous change” (Clarke & Clegg, 1998: 12).

The long wave theory can also demonstrate the way in which individual industries undertake innovation. Figure 2 illustrates the stages of innovation that provide a concrete pathway for innovation (Twiss, 1993).



**Figure 2: The Innovation S Curve**

At the first stage of the innovation process ideas are incubated, diversifying as they grow. Once they get to maturity, there is decline as new products come on the market, or a more rapid decline if there is a new technology that has emerged (Twiss, 1993). This industry life cycle helps to understand the innovation process. Figure 3 shows an example of this process, using the automobile as the innovation.



**Figure 3: The Innovation S Curve for the Automobile**

As the first automobile reached the maturity phase of the S curve, another major innovation, the automatic transmission, began a new innovation. In the 1990s, the introduction of smart electronics then started the next major innovation. In this model, innovation is ordered, predictable and can therefore be planned with more certainty (Twiss, 1993).

The rational process involved in this model of innovation allows for innovation to be mapped – defining of ideas, assessing options and choosing appropriate innovations in a logical and sequential manner. Such bureaucratic theories place the manager in charge of the process. They are less useful in periods of rapid change, but can be used to provide some indication of the innovation process.

In education then, a traditional approach does not encourage innovation, but rather seeks to move back to a defined boundary for education, where there is a focus on curriculum coverage, acquisition of knowledge and a ‘one size fits all’ approach to education.

### **An Organic Approach to Innovation in Education**

Cairney (2000) describes innovation as “a dynamic social process involving complex interactions between various actors and institutions that actively seek to learn from one another” (Cairney, 2000: 19). This complex interaction is contextual, in that innovation is “an idea, practice, approach, process, system or object which is perceived as new by an individual, group or organization. What is familiar in one context can appear as an innovation in another” (Robinson, 2001: 16). Robinson describes innovation as “essentially a process of social change and therefore complex, multi-level, culturally situated, occasionally irrational and unpredictable” (Robinson, 2001: 25).

Educational innovation relies on socio-technical change, hence it is important for any study of innovation to focus on a larger theory of social change (Wagschal, 1972). One such organic model of innovation is an ecological model, which deals with “the interactions of human and non-human actors” (Tatnall & Davey, 2003). The ecological framework for innovation accepts the complex nature of the interactions between people and technology and does not seek to simplify the process. Tatnall & Davey (2003) believe that an ecological approach to innovation is most effective, especially when introducing information technologies into organisations. In order for the innovation to be successful consideration needs to be given to:

1. the effort required in implementation versus satisfaction obtained;
2. competing organisms;
3. cooperation from people, technologies and other elements; and
4. filling a niche (Tatnall & Davey, 2003).

An organic approach to innovation recognises that systems are complex, and that innovation, rather than happening in a sequential manner, is often messy and non-linear (Fullan, 2001a). Hamel (2000) discusses the importance of non-linear innovation as follows:

...in the age of revolution it is not knowledge that produces new wealth, but insight – insight into opportunities for *dis*-continuous innovation. Discovery is the journey; insight is the destination (Hamel, 2000: 13).

An offspring of this organic, chaos approach is complexity theory, which also has a place in education. Morrison (2002) describes complexity theory as looking “at the world in ways which break with simple cause-and-effect models, linear predictability and a dissection approach to understanding phenomena, replacing them with organic, non-linear and holistic approaches in which relations within interconnected networks are the order of the day” (p.8). Complexity theory goes further than other models of open systems theory, having a greater focus on novelty and creativity and requiring unpredictability and self organisation. Since systems are considered to be constantly out of balance, order is seen as emerging from trying to establish equilibrium (Morrison, 2002). This means that any innovations introduced to schools will have a range of unexpected outcomes rather than a linear cause-effect result.

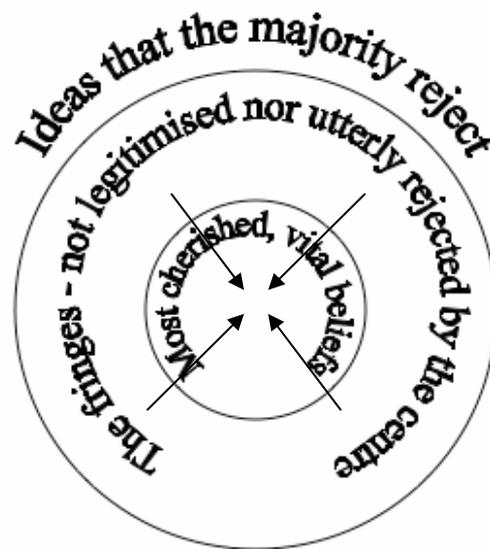
This second pathway to innovation is based on a less linear approach, using chaos theory and creativity as key features. Chaos theory is based on the idea that linearity does not exist and that change is unpredictable (Gibson, 1998). “As our world becomes more complex and interdependent, change becomes increasingly non-linear, discontinuous and unpredictable. Therefore the future becomes less like the past” (p.6). This implies that we need to challenge the way we have done things in the past.

The complexity of change is further described by Handy (1994), who highlights the unpredictable nature of change - seemingly at odds with the rationalist view of innovation described previously:

We are entering an age of unreason, a time when the future, in so many areas, is to be shaped by us and for us; a time when the only prediction that will hold true is that no prediction will hold true; a time, therefore, for bold imagining in private life as well as public; for thinking the unlikely and doing the unreasonable (Handy, 1994: 13).

The literature on Futures Thinking also supports the unpredictability of innovation, as “...you can't predict it from current trends. It's the discontinuities, the surprises, which

change the course of history” (Swan, 1998: 2). However, it is important to read the trends and use these to get the right timing for the launch of a new product (Gilbertson & Gilbertson, 1995). This reinforces the need to look at what is happening at the fringes of change, where ideas do not relate to what is done at the moment, but nor are they completely rejected as unworthy. Futurists maintain a watching brief on fringe groups and trends, in order to better provide a range of possible scenarios. Schwartz (1991) explains innovation as often starting from the fringe. For example, the two founders of Apple computers had their roots in Eastern mysticism and computer hacking but the ideas they generated were eventually developed into mainstream thinking. Figure 4 illustrates the role of fringe developments in leading change.

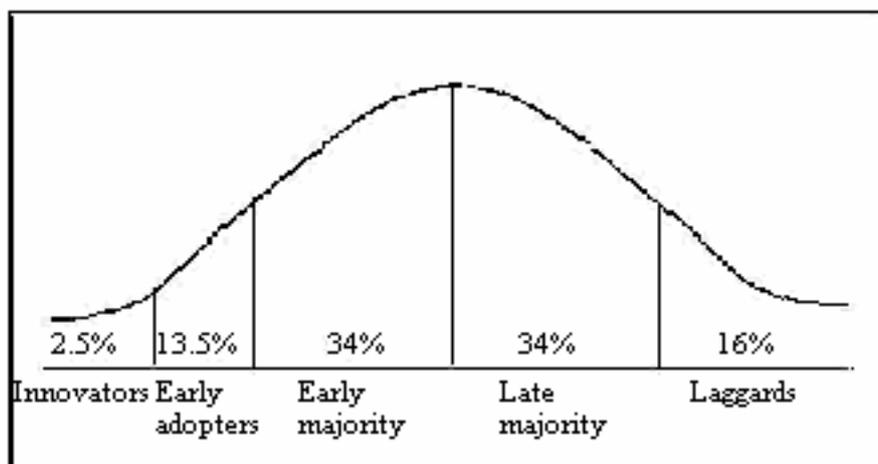


**Figure 4: A Model of Fringe Developments**

There are some ideas that will never be accepted by the majority of a culture. However, there are also some innovations that develop with a few key organisations or individuals. These are fringe ideas, which can be radical in nature and which others follow with interest. The arrows in Figure 4 show that these ideas can move from the fringe to being more widely used and eventually become incorporated into the everyday way of doing things. This development of innovation then becomes the norm and new fringe groups establish. In this approach to innovation, the view is a more pluralistic one, where culture, people and organic growth are fostered. However, according to Senge (1990), these changes in mindset don't usually start on a large scale. In the innovation process, the change may be adopted by a few, before growing and reaching maturity. Both chaos theory and economic theory (the waves of economics) fit with the process of change, but they approach it from differing viewpoints.

Education at the fringe incorporates radical innovation and has an important role in showing mainstream education the possibilities for innovating. Schwartz (1996) describes the fringe as the “areas not yet legitimized but not utterly rejected by the center either” (p. 69), where the centre represents the important beliefs of the society. The inhibiting nature of this centre drives innovators to the fringes, where they are freer, but still constrained by the current reality. It is in this area that this study occurs, rather than at the outer edges that are rejected by the majority (Schwartz, 1996). Both schools are on the fringe in that they are trying to innovate in new ways. While some of the ideas used are accepted as legitimate by most educators (bringing them closer to the centre of the model), others are towards the outer edge of the fringe and are not adopted by the majority of schools.

Rogers (1995) discusses how these innovations are diffused. He provides an example of how new maths was introduced in Pittsburgh. The initial adopter of the programme was seen as too innovative to be an appropriate role model for all the other superintendents. Others waited “until the opinion leaders...favoured the innovation” (Rogers, 1995: 65). Figure 5 shows how the acceptance of innovation occurs, with a small number of people being the initial innovators (Rogers, 1995: 262).



**Figure 5: The Acceptance of Innovation**

This model is based on the degree of innovativeness of the individual or organisation, with the innovators being the leaders of innovation and the laggards being least innovative. The 2.5% identified as innovators are categorised as being venturesome and play “a gatekeeping role in the flow of ideas into a system” (Rogers, 1995: 264). Early

adopters play a powerful role in having the respect of his or her peers. It is important that the change agent, usually a member of the early adopter population, be trusted and respected by the rest of the adopting population because “most individuals evaluate an innovation, not on the basis of scientific research by experts, but through the subjective evaluations of near-peers who have adopted the innovation” (Rogers, 1995: 36). The near-peers are seen as role models, and their behaviour tends to be imitated by others. In contrast, innovators are usually viewed with mistrust by the rest of the population because they deviate too far from the norms of the system (Sherry, 2004).

The early majority represents a large group in terms of supporting innovation. They will deliberate for some time before completely accepting the innovation. Once they have adopted the innovation others will follow. The late majority, while initially sceptical, will follow once the ground work has been undertaken. The laggards, as the most traditional of the group, will want to make certain that a new idea will succeed before opting in to the change.

### **Summary**

Linear models of innovation try to provide a blueprint for innovation. An organic approach can be more responsive to change. There is a move towards a less linear view of innovation (Hesselbein, Goldsmith, & Somerville, 2002), in keeping with a greater focus on the role of people. One of the difficulties is that educational innovation, “implies a set of values, and there is disagreement over what those values are” (Pring, 2000: 11).

This study focuses on an organic view of innovation. This focus is appropriate for the methodology used in this study, where the construction of meaning is considered to be developed by the individual in interaction with his or her environment. This interaction is non-linear and complex – and organic in nature. However, in reality, there is not a distinct demarcation between linear and organic models of innovation, nor one agreed definition of either (Ravitch, 2000). Both viewpoints are on a continuum of beliefs that can function together (Ackerman, 2003).

### **The Extent of Innovation**

Innovation is sometimes differentiated in terms of being either incremental or radical. This dissertation focuses on the radical, transformational or systemic approach to

innovation, since the new schools being studied were set up to provide different systems of education. It is therefore important to define radical innovation and distinguish between it and more incremental forms of innovation.

### **Incremental v Radical Innovation**

At a micro level, innovation can mean small advances, but can enhance a whole organisation. Clarke and Clegg (1998: 227) illustrate this difference as summarised in Table 3. Incremental change is of a more on-going nature, with improvements being undertaken within the existing structures so that equilibrium is maintained. Radical change can disturb equilibrium because it is more concerned with altering the status quo and breaking into new territory.

**Table 3: Incremental and Radical Industrial Change**

Incremental Change	Radical Change
Continuous progression	Frame breaking burst
Maintain equilibrium	Research new equilibrium
Effect organizational part	Transform entire organization
Through normal structure	Create new structure
New technology	Breakthrough technology
Product improvement	New products create new markets

As Table 3 shows, radical change is systemic, or transformational, change that affects the whole organisation through the development of major new ideas. Radical change creates short term disruption in an organisation while new ways of working are developed. Nystrom (1990) argues that only radical change counts as innovation. It can be in many forms such as “new products, processes, know-how or patents...new organisational mechanisms, budgeting systems, management devices which represent new ways of looking at and changing the world” (Nystrom, 1990: 5). However, the more radical the change the greater the chance that failure might occur.

In work completed by Cuttance *et al.* (2001), a number of Australian Schools were tracked for their innovations. These were largely changes of a small scale within the organisation, especially in the areas of early literacy, mathematics, ICTs and the middle years. Cuttance *et al.* identify innovation as “the ‘bottom up’ efforts of schools to put in place educational practices based on their understandings of best practice as evident in

other schools or research literature” (Cuttance *et al.*, 2001: 5). They state that innovation does not necessarily mean new ways of teaching and learning, but more of a way in which schools can address the challenge of meeting students’ needs. This is an incremental view of educational innovation, in that change is made on a small scale, in a particular area, rather than on a school wide or systemic basis.

Ellyard (2002) suggests that there are two types of innovation, as displayed in Table 4, which are referred to as repairing the old and creating the new. ‘Repairing the old’ is related to continuous improvement of existing structures, whereas ‘creating the new’ is concerned with changes that disrupt the current ways of doing things.

**Table 4: Types of Innovation (Ellyard, 2002)**

Types of Innovation	Description
Repairing the old	Solving existing problems of efficiency, quality, productivity and design of existing products and services. This is an incremental process.
Creating the new	This is mission led and unreliant on existing products for its foundation. New concepts are developed, and new industries (such as the internet) can result. This type of innovation is needed for success and long-term growth in the new millennium.

In Ellyard’s view, we need to move from an ‘improving the old’ innovation to a ‘creating the new’ innovation, where creativity and enterprise are critical elements (Ellyard, 2001). In ‘creating the new’ we will be preparing ourselves and our organisations for the future. Ellyard believes that schools need to create new ways of educating in order to sustain growth for the future. “Job markets are requiring more and more knowledge integrators while the education system still churns out an over-abundance of narrow specialists” (Ellyard, 2001:93).

Schlechty (2001) describes systemic *change* as being, “essential when programs and projects require procedural and technological changes that are so far out of the prevailing tradition that they cannot be supported by the existing structure and culture. Such changes are by definition *radical* in that they “go to the root” of the system (p.42).

This highlights the importance of systems change, and a whole look at the underpinning beliefs of schooling.

Stoll, Fink and Earl (2003) also suggest that reform needs to be bolder, if we are to make a difference in education. They claim that:

In an attempt to reposition education for a post-modern world of diversity, complexity, uncertainty and innovation, governments around the world seem determined to 'polish yesterday's [educational] paradigm' (Peters, 1999). We propose a bolder stance. Innovation requires creativity, imagination, autonomy and risk taking. To respond to these needs, an educational institution must possess the same characteristics. We argue, therefore, that the agenda for reform must be redirected towards the essential purpose of education: learning – learning to create, solve problems, think critically, unlearn and relearn, and to care about others and the environment (Stoll *et al.*, 2003:18).

It is these very features that Caine and Caine (2001) argue are being “leached out of the system” by the standards movement (Caine & Caine, 2001: 123). There are more schools moving away from these ideas based on determinism (Holt, 2002). Yet in other cases people are withdrawing their children from schools where reforms are being carried out. This is the case in Beijing where China is trying to get schools to challenge students to think for themselves, but university entrance is still dependent on national exams that focus on memorisation of facts (*Economist*, 25/1/2003).

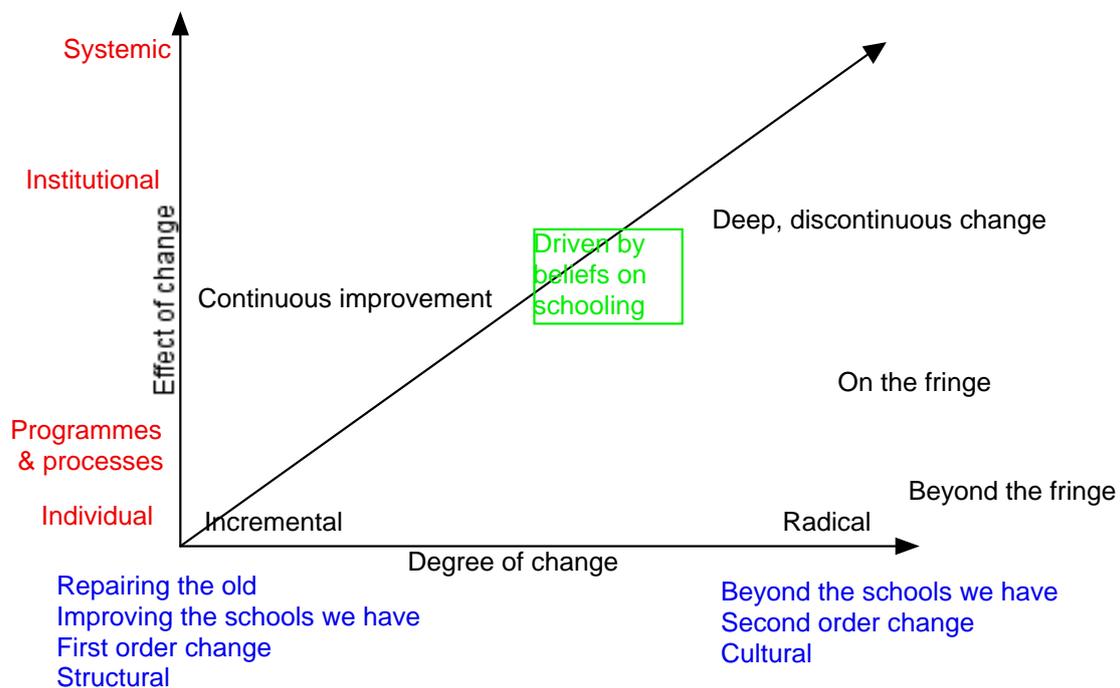
Innovation is more related to fundamental change where change is deep and discontinuous, rather than incremental as in the case of continuous improvement (Mid-continent Research for Education and Learning (McREL), 2001). This idea of innovation is supported by discussions into first and second order change (Clarke & Christie, 1997; Cuban, 1988; Fullan, 2001a). First order change is where attempts are made to improve schooling without altering the basic organisational features or the roles performed by those within the school. Second order change refers to change that reorganizes not only structures, but also cultures and brings about deep changes in the practices and roles within the school. In order for deep reform to occur in our schools, there need to be changes in beliefs and understandings (Errington, 2001; Fullan, 2001a; Lockwood & Gooley, 2001).

## Summary

This review of the literature has identified that innovation may be incremental, or radical. Goodlad (1984) describes this difference as improving the schools we have, and *beyond* the schools we have. One deals more with continuous improvement or innovation within the school. The other deals with changing the face of education from a systems perspective (Ellyard, 2001; Senge, 1990). Both are needed if schools are going to meet the needs of future students.

This research focuses on radical change. This is seen as second order change, where cultural or deep change occurs to schooling.

The following model of innovation in education, attempts to conceptualise these perspectives, from the review of theories of innovation. Figure 6 outlines the movement of change from having an effect only on an individual, to having a major effect on a whole system; and from changes being small to those that are deeply disruptive. The diagram starts from the premise that change does occur, hence does not show 'no change' occurring.



**Figure 6: Conceptualising Theories of Innovation in Education**

The amount of innovation will be greatest when it affects a whole system (for example a whole school district) and when it is radical in nature. This is influenced by individual and collective beliefs about schooling, as indicated by the arrow through the centre of

the diagram. Where the x and y axes meet individuals will be implementing small changes that maintain the status quo. 'Beyond the fringe' changes are shown as beyond radical and being of an individual nature. If the change becomes more accepted it moves from 'beyond the fringe', to 'on the fringe', to 'deep, discontinuous change' and in doing so has a greater effect at the institutional or systemic level.

### **Information and Communication Technologies**

The use of technologies in education needs to acknowledge that there should be different pathways for different people, to match their level of expertise and learning styles (McKenzie 2001). Although technologies are becoming more evident in our schools, there has been little radical innovation to change the structure of schools, other than the virtual schools movement, where online learning can be delivered to students anytime in any place (Chalmers & Krawec-Wheaton, 2003).

The transformative power of ICTs is supported by the research into 'new times', which suggests "new ways of looking at learning that promote engaged, meaningful learning and collaboration involving challenging and real-life tasks; and technology as a tool for learning, communication, and collaboration" (Jones, Valdez, Nowakowski, & Rasmussen, 1995). However, current research would also suggest that schools are not keeping up with technological change and that ICT integration is still uncommon (DEST, 2002b). "This may be an indication of the tension arising from the conflict between a traditional hierarchical education system and globalization" (Russell & Finger, 2004: 2). It seems clear that ICTs have yet to show the ability to transform education and that most changes have been incremental at best or have produced classrooms that still operate as they did before (Cuban, 2001).

Regardless, as November (2002) indicates, there are an increasing number of schools that use ICTs as a stimulus for change in a way that is more flexible, adaptive and interdependent.

The real revolution is not about computers, just like the industrial revolution was not about engines. We need to look beyond the technology to seek the ways of collaborating together to help children become independent, critical managers of their own work. (November, 2002)

While the use of ICTs may allow innovation to proceed at a faster pace, "the technology base must always be a means of fulfilling the overarching vision or, mission of the firm, not its *raison d'etre*" (Gilbertson, Winsley, & Couchman, 2001: 172). This relationship

between the cultural and technological aspects of innovation is highlighted by Dempster who stresses that “being able to argue for the human dimension of the education process against the surging tide of technology is critical in my view, for the future well-being of students and society at large” (Dempster, 1997: 15).

Simply adding new and emerging technologies, such as ICTs, to the current highly prescribed school culture does not guarantee that the ICTs will be integrated meaningfully in the creation of new teaching and learning environments (McKenzie, 2000; McKenzie 2004). There are identifiable barriers to successful ICT integration in schools including cost of equipment, infrastructure, staff training and readiness. Clearly, planning for ICTs becomes much more complex than providing students with access to computers and improving students’ ICT skills. While many initiatives related to computers in schools have focused on the integration of ICTs into the existing curriculum, this by itself might be insufficient, as ICTs might hold potential for enhancing the existing curriculum, and influencing the organisation and reform of schooling. Oettinger (1969) believes that, in reality, technological innovation in education is a myth. According to Oettinger, unless there is major structural cultural change within an organisation no real innovation is possible.

In order to prepare students to be flexible, adaptive, and interdependent, schools need to become more connected and less isolated. While schools are increasingly providing the communications infrastructure to connect educators and students to the world, wiring classrooms also requires that we help students manage their own experiences, including managing their time, designing their own homework, co-creating assessments of their work, and continuously extending their collaborative work around the globe.

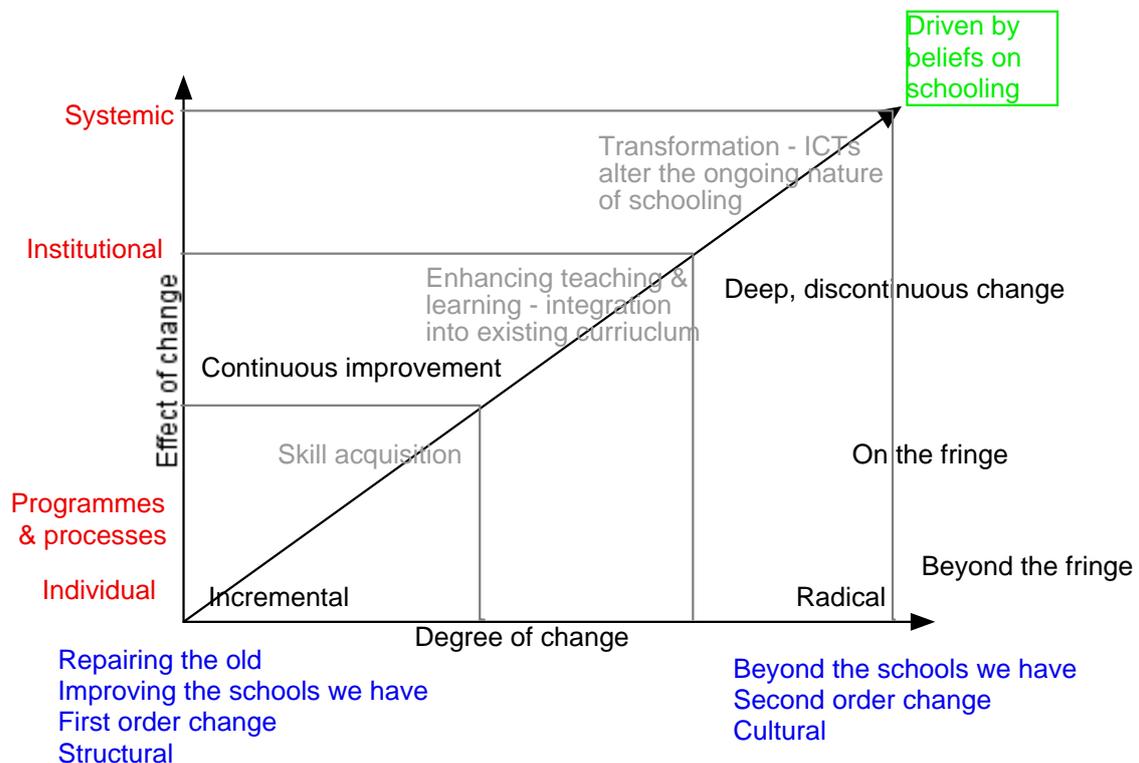
A recent report by DEST (2002) identified the following four different, but overlapping, dimensions of ICT use in schools. ICT works as:

1. a tool to use across the curriculum or in separate subjects where the emphasis is on the development of ICT-related skills, knowledge, processes and attitudes;
2. a tool for enhancing students’ learning outcomes within the existing curriculum and using existing learning processes;
3. an integral component of broader curriculum reforms, which will change not only *how* students learn but *what* they learn; and

4. an integral component of the reforms, which will alter the organisation and structure of schooling itself (DEST, 2002: 21).

These dimensions provide a way to contextualise the role and purpose of ICT use, and hence impact on the competence required by the educators who focus on particular dimensions. They relate well to the ICT framework previously discussed in Chapter 1. This study explores the use of ICTs within the schools with a particular focus on the third and fourth of these dimensions, as these most represent radical innovation.

If the ICT framework is combined with the innovation framework shown in Figure 6 (p. 38), we can see the possible impact of ICTs as innovation becomes more radical. As displayed in Figure 7, the transformational potential afforded by ICTs might result in radical, systemic change.



**Figure 7: Conceptualising Innovation in Education and ICT Use**

This expanded model shows that the acquisition of ICT skills has a small impact on change, at best influencing individuals to use ICTs as tools. As ICTs are used to enhance teaching and learning, they become less of an ‘add-on’ and can create changes in individual schools. When ICTs are used in completely new ways they have the potential to transform the nature of schooling. While Figure 6 shows that radical change can occur without the use of ICTs, Figure 7 illustrates that the addition of ICTs can help

achieve this transformation. The use of ICTs can provide support, strength and sustainability to the innovation. This conceptual model provides the framework for data collection.

### **Drivers and Barriers to Innovation**

The literature identifies a number of themes for developing innovation. Some of these relate, in terms of their research and the language used, to the business environment. For example, Birchfield (2000) cites research undertaken by Porter, where New Zealand’s largest 500 companies were asked the question - “What creates the innovative capacity of a nation?” His findings suggested that four elements combine to create innovative capacity:

- basic “inputs”;
- an attractive investment “climate”;
- abundant “competition”; and
- “clusters” – geographical concentration in a country or region of a group of related and supporting enterprises (p. 62).

However, the research from business innovation can inform what happens in the school setting. In research into business innovation in New Zealand, Gilbertson *et al.* (2001) identified five main variables related to successful technological innovation in NZ. These variables, as shown in Table 5, were used to inform my theoretical framework and inform the justification of the questions asked.

**Table 5: Variables that Contribute to Technological Innovation in NZ**

Broad Area	Explanation
Origins of innovation	This explores where the innovation came from – such as idea generating processes, published sources of ideas, customer ideas, external sources, nature of the technology
Dynamic Processes	Capturing the benefits through differentiation or diversification, enough time, organisational structures such as teamwork, organisational culture, business management skills such as financial planning, resourcing of innovation, networking/alliances, people relationships and ability of the organisation to be adaptable
Background/Past Experience of Key Players	Past experience, family background, knowledge and experience, skills
Motivations	Nature and characteristics of innovators, how innovators lead and motivate others, interrelationships and perceptions, financial and non-financial motivations
External Influences	Government incentives and specific policy interventions, industry structure and organisation, economic reforms, regulations, customer and market influences, overseas and international influences

Each variable can have a positive or negative effect on innovation. For example, the past experience of key players can mean that they are willing to take risks and try new ideas. However, past experience can mean that key players are used to working in a risk averse culture and are more likely to block change or to be most comfortable working within the known systems. Drivers and barriers to are not always separate ideas, but have many common links. Sometimes a barrier can be turned to an advantage. The above Table has can be consolidated into three main areas for the purpose for studying drivers and barriers in more depth. These are factors that are driven by individuals and their personal experiences, factors that pertain to the organisation in particular, and factors that are external to the process. Innovation can be influenced by both internal and external forces. Many of these are common to all organisations, but some relate particularly to the educational environment. The next sections examine internal and external forces, and also those in which internal and external are inextricably linked.

### **Internal Capacity**

The organisation plays a major role in fostering or inhibiting innovation. When a school supports a climate of innovation and change and encourages risk taking, innovation is more likely to be apparent (Lockwood & Gooley, 2001; Wycoff, 2000).

The Commonwealth Department of Education, Training and Youth Affairs (DETYA) funded research into Innovation and Best Practice. The Innovation and Best Practice Project (IBPP) identified a number of things that increase innovation in the class and the school (see Appendix 1). Their findings indicate that not all schools are capable of innovating as they may lack the internal capacity. In some cases, if they do innovate, then other local schools may be affected negatively (Cuttance *et al.*, 2001). That study emphasized the role of leadership in developing innovation.

The literature highlights the importance of leadership for organisational innovation. Gilbertson and Gilbertson (1995) provide answers to the question - What makes a leader of innovation? According to Gilbertson and Gilbertson, the following are evident:

- passion and vision for their innovation;
- lead from front and by example;
- wide experience of jobs at various levels;
- travelled overseas or have perspective on cultural issues;

- explicit values, especially that innovation comes from people not structure; and
- have well developed processes that enhance innovation in their organisation (Gilbertson & Gilbertson, 1995).

Therefore, for innovation to occur successfully, there need to be clear strategic decisions made regarding the vision and direction of the innovation. However, as the innovation proceeds, there also needs to be the ability for the project team to use tactical discretion, so that they can change direction throughout the process (Winsley, Gilbertson, & Couchman, 2001).

Common features of an innovative organisation, as identified by Clark and Clegg (1998) are:

- a culture of creativity is nurtured;
- organic, free flowing and flexible;
- empower employees;
- few rules; and
- emphasise bottom up innovation.

The notion of bottom up innovation has become more popular as businesses move away from the focus on strategic planning, driven from the top, to a focus on strategic thinking approach that is driven from the bottom. This approach is more organic in nature and allows for greater flexibility. The people in the organisation are the key drivers of innovation, hence the importance placed on organisational climate. It is clear from the literature (Kanter, 2001; Hesselbein *et al.*, 2002) that innovation is closely linked to culture and values.

At times, innovation can be affected at the systemic and school level. At the systemic, or macro level, there may be national or international requirements placed on schools which help or hinder innovation. However the same idea can be applied to the school, or micro level, in that the way in which a school develops its internal capacity to deal with change plays a major role in its success or failure.

Pace and fragmentation can also have a major impact on innovation. “The main problem is not the absence of innovation in schools, but rather the presence of too many disconnected, episodic, fragmented, superficially adorned projects” (Fullan, 2001b: 21).

Tinkering at the edges can lead to innovation overload. Fullan (2001b) believes it is worse for schools than businesses because we have the added complication of having accountabilities placed on us by the bureaucracies. We have to be able to balance this with development of professional learning communities.

Sustainability has already been mentioned as being crucial for innovation. Cuban (1998) believes that the reforms that are less likely to stick are those that seek to bring about a change in teaching – because they are often proposed by policy makers, who know little about the classroom. This places an increasing importance on providing schoolwide staff development that focuses on pedagogical issues and provokes discussion of the role of teachers and of schooling (Andrews & Rothman, 2002). Internally, schools may provide insufficient expertise or technical support, making sustainability impossible (Robinson, 2001). This is particularly the case with the introduction of new technologies if infrastructure and professional development are not provided.

For some, staff development can be too little or too late (Robinson, 2001) or be seen as extra workload. There are many pressures to be innovative and take part in new initiatives but overload often means that, “innovations were adopted on the surface with some of the language and structures becoming altered, but not the practice of teaching” (Fullan, 2001b: 6). Even if it is adopted by individuals or groups, until critical mass is achieved, the innovation will fail to make lasting change (Cumming & Owen, 2001).

The ‘s curve’, as referred to earlier in this Chapter, is also used in the education environment (Robinson, 2001). It can be used to identify typical adoption patterns of an innovation, allowing one to speculate when critical mass may be achieved.

The rate needs to reach between 10 and 20 per cent of the total (a ‘critical mass’) before the innovation takes on a momentum of its own, at which point interpersonal and informal networks of communication among peers are influential in spreading information and value judgements (Robinson, 2001: 21).

### **External Factors**

Fullan (2000) outlines five powerful external forces that schools must contend with and turn to their advantage in order to innovate effectively. They are:

- parents and community,
- technology,
- corporate connections,

- government policy, and
- the wider teaching profession (Fullan, 2000: 582).

The development of networks, and communication and dialogue with the school community, are two ways in which schools can help harness these forces (Cuttance *et al.*, 2001).

The clustering of innovation is represented through the establishment of business incubators, ‘skunkworks’ and like minded industries that are physically close, as in Silicone Valley. This allows competition, but also creates an exciting cross fertilisation of ideas. It can also help create a climate that supports innovation, but this also needs to be supported and developed on an organisational basis.

Fullan (2001b) shares the belief that the growth of networks provides greater opportunities for innovation. As schools and institutions, the question is whether we have the ability to change, especially as change is messy and complex (Fullan, 2001a). The more we work on partnership the greater the possibilities for long lasting innovation that will make a difference globally. Ellyard (2001) reinforces the view that collaborative partnerships must be developed, especially as we move to a Planetist world where interdependence is key and where there is a greater allegiance to the Planet and its life support systems than there is to one’s country (Ellyard, 2001:31).

Government policy also plays a role in fostering or hindering innovation. In terms of the wider support for innovation in education, Cuttance *et al.* (2001) found that “The policy and systemic programme infrastructure needs to be designed to support innovation if the strategic intentions of school systems are to be realised more successfully” (Cuttance *et al.*, 2001: 221). Policy makers need to encourage school-based initiatives and reduce impediments. This means “maintaining a constructive level of pressure through programmes that require schools to demonstrate that their innovations are achieving improved outcomes for students” (Cuttance *et al.*, 2001: 221).

Lack of financing or human resource support can also stifle innovation (Lockwood & Gooley, 2001; Cumming & Owen, 2001; Robinson, 2001). This lack of resourcing can be related to external sources, for example the NZ Ministry of Education, or to the priorities established by the school. Support, in terms of infrastructure, resources, or training, is not always provided, and time-scales can be unrealistic.

The government also influences the curriculum taught and how prescriptive it will be. For example, Treadwell (1997) refers to the New Zealand Technology curriculum document in light of New Zealand's history of innovation and entrepreneurship, which has often been stumbled across by trial and error. "This is the first concerted effort to empower our students to be innovative and independent, reinvigorating the concept of kiwi ingenuity" (Treadwell, 1997: 9).

Innovation is difficult in an environment where the curriculum does not focus on the skills needed for the future, where outcomes dominate or where teachers teach in ways that which minimise chances to create or innovate. There are efforts being made to provide authentic learning contexts that are futures oriented. One such programme is the *New Basics* trial being implemented in Queensland, Australia, over a four year period.

New Basics is not one more educational innovation that slots into existing school and system practices and structures. It is a vehicle by which these very practices and structures can be reshaped so that there is an improvement in students' learning outcomes because the *capability* of schools and the system to improve outcomes has itself improved. (Education Queensland, 2003: 2)

In New Zealand, a major review of the curriculum has resulted in the Ministry of Education revisiting curriculum through co-constructing new ideas with educators throughout the country. The development of key competencies will change the focus of curriculum in New Zealand and has the capability of leading to more authentic learning, should this be built upon at the school level. The lack of major change in schooling hampers innovation by discouraging students from being independent. This is especially so at the secondary school level. Abbott and Ryan (1999) state that at 14-15 students get turned off schooling because,

it simply does not seem real in comparison to the emotionally charged environments they experience away from school with their peers....Outcomes based education, national curriculum targets, for all their achievements, are essentially specific and do not support the genuinely creative or the entrepreneurial. An ever increasing pace of change has made the ability to learn far more important than any particular skill set (Abbott & Ryan, 1999: 5).

A prescriptive approach to education hampers innovation. If innovation requires greater flexibility in learning (McQueen & Gibson, 1996), there must also be changes to the type of teacher education provided. In order for students to be innovative, teachers must

understand the nature of learning, innovation and entrepreneurship and demonstrate this. Teacher training needs to prepare them for this role if innovation is to be fostered.

The effect of these accountabilities being constantly imposed on our schools is that they can “sap the strength and spirit of schools and their communities” (Hatch, 2000: 4). When this occurs, innovation is unlikely to occur.

Educator and historian Larry Cuban believes that: “School reforms are a product of the cultural, political and economic forces of their times” (O’Neill, 2000: 6). They reflect what the public wants and are vulnerable to pressure from outside forces. “There is often a lack of scientific evidence that shows that one kind of innovation is clearly superior to another” (p. 7).

In education, pressure from external sources makes innovation more difficult to develop and sustain than for many businesses. As Connell (1980) points out, “Frequently, worthwhile reforms have been proposed only to founder because teachers were inadequately prepared to put them into practice or the public were not ready to accept them. Inspiration has faltered in the face of inescapable routine” (Connell, 1980: 6). The literature on change management all points to the difficulties of imposed change. This can alienate staff and disempower them (Clarke & Christie, 1997).

External forces can discourage innovation much more in an educational setting, for example, the role of curriculum and of teacher training are specific to the educational setting. These factors can also make innovation in education more difficult to achieve.

### **Multiple Perspectives – Individual, Organisational and External**

One of the difficulties is that innovation in education can be looked at from different points of view as a focus for student learning from multiple teacher perspectives, school perspectives, or the whole education system perspective. Perspectives on innovation can also be dependent on the community that the school serves, including the political influences and cultural make up of the school. These multiple perspectives make innovation a complex process, which does not lend itself to a linear, formulaic approach.

Research by Watt (2002) identified the inhibitors of innovation as the curriculum, timetables and scheduling, outcomes based learning approaches, physical space and structures of the buildings/classrooms. Similarly, Gilbertson and Gilbertson (1995) collected data from corporate managers, entrepreneurs and a panel of innovation experts. Three groups identified nine barriers to innovation in New Zealand. These were:

- low incentives for idea champions;
- creative people are squashed and controlled;
- top management are short-term orientated;
- accountants and lawyers have too much influence in management;
- high personal risk if the innovation fails;
- limited incentives for organisational entrepreneurs;
- a problem of institutionalising attitude change;
- decision-making is too centralised; and
- a reluctance to invest in ‘problem-oriented training’ as opposed to courses (Gilbertson & Gilbertson, 1995: 13-14).

The most important variable was the role of the government, followed by economic and organisational factors, with social factors being seen as significantly less important (Gilbertson & Gilbertson, 1995).

The sustainability of change and the ability to constantly adapt are seen as major challenges to innovation (Clarke & Clegg, 1998). Organisational structures and climate need to support innovation if this barrier is to be overcome, for: “Classical business structures that specialise work and fragment processes are self-perpetuating because they stifle innovation and creativity in an organisation” (Hammer & Champy, 1994: 28).

In summary, speed of change, sustainability, organisational capability and culture, leadership, external influence, role of government and resourcing are all factors that can prevent or reduce innovation in any organisation. In addition to these factors, schools have a range of other factors that can make innovation more difficult. The need for ongoing professional development, which discusses the role of schools and the future needs of students, is crucial if schools are going to grow innovation.

## Summary

Educational innovation tends to be focused on complexity, while the government is still driven by economic theory. This means that innovations tend to be reduced to small changes perhaps not regarded as innovation in business. Schools generally are not at the forefront of any change. “It takes about three years to achieve successful change in student performance in an elementary school. Depending on size, it takes about six years to do so in a secondary school” (Fullan, 2000: 581).

Radical innovations in education are small in number and difficult to sustain, for as Fullan outlines, the innovation successes are in the minority and “they happen despite the current system, and are unlikely to be sustained because of the current system...Innovations – even promising-looking ones – turn out to be burdens in disguise” (Fullan, 2001b: 24). Substantive change only occurs when changes occur to culture. That is, substantive change occurs when second order change occurs. Critical mass must be achieved if innovation is to be sustained.

There are some aspects of innovation which education shares with business, and others that are more specifically related to education. Both education and business place importance on professional development, the role of leadership and development of a learning organisation that supports innovation (McKenzie, 2001). Another feature of innovation evident in both education and business is the importance of creativity (Ellyard, 2001; Cumming & Owen, 2001). However, there are some features of educational innovation that differ from business innovation. As Cuban points out, “Schools were set up to develop citizens who care for a community, who can contribute to that community. You don’t have that when you go to the local supermarket. You’re in there to get a product and get out” (O’Neill, 2000: 9). This makes the school focus somewhat different from that of business.

The impact of external forces is significant in education, as “Those who ignore the social and cultural realities for schools while launching and implementing projects are not likely to make much progress” (Fullan, in McKenzie, 2001: 2). Schools are different from other organisations because they are value laden, they shape the lives of students “and thus, our culture and society” (McREL, 2001: 19).

Schools are also unique in that innovation can involve not only individual or organisational innovation, but also the direct teaching of skills that encourage children to be innovators and entrepreneurs. “Indeed, it takes a lot more skill to help children think for themselves than it does just to give them information” (Kohn, 2000: 134). Before teachers can weave innovation into the curriculum and into their teaching practices, they need to understand innovation and entrepreneurship and have the opportunity to improve and enhance their own skills (Cumming & Owen, 2001: 8).

At the heart of the matter is whether learning is based around our experiences and inquiry, or whether it is an instructive process to transfer skills and culture. The first approach is favoured by the writer, as a progressive way forward and one that identifies innovation as complex and messy.

The literature has also identified that this change may be incremental, or radical. (Goodlad, 1984) describes this difference as improving the schools we have, and *beyond* the schools we have. One deals more with continuous improvement or innovation within the school. The other deals with changing the face of education from a systems perspective (Ellyard, 2001; Senge, 1990). Both are needed if schools are going to meet the needs of future students. If we are to have positive change in schools there needs to be more support at the policy level (Wylie, 1998; Mitchell, Cameron & Wylie, 2002).

Perhaps the tide is turning and the tipping point is nearer. In New Zealand, previous funding available to schools under the title of Innovation focused on projects dealing with students ‘at risk’. In 2003, a new funding pool was established (NZ Ministry of Education, 2003), aimed at providing grants for a maximum of three years so that schools can partner with early childhood education services and/or tertiary providers to increase “the number of inter-school education projects” (Ministry of Education, 2003: 2). This funding must still be accompanied by a great deal of documentation, regular milestones and outcomes that follow a linear model of innovation. These requirements will create a great deal of extra work, and for schools collaborating for funding, there will need to be thought given to workload created by the innovation and sustaining the innovation once external funding runs out.

Two general branches of innovation are supported by the literature. One is a traditional, linear model of management, where innovation can be planned for and the outcome determined. The second view looks at innovation as a more creative process that can have a number of outcomes, and hence is more complex to plan for. These viewpoints are consistent with the move of business management from a Taylorist approach, to a more postmodern approach. While there are differences between the two approaches, they can work side by side, or be blurred in terms of their use. For example, in the case study schools directors try to reflect an innovative approach to documentation, providing clear guidelines and expectations that prescribe the way things are to be done. At the same time these guidelines make explicit that there is plenty of scope to push the boundaries and to make mistakes in doing so. In this case the overarching approach is organic, but there are aspects of compliance.

There was also agreement in the literature that the process of innovation involves implementation and application. “The underlying basis of innovation is the widely held belief that ideas are useless unless and until they are used” (Williams, 1999: 14). Once implementation had occurred, sustaining the innovation was identified as a commonly occurring issue.

The importance of people in the innovation process was highlighted. In organisations, innovation can only occur and be sustained if the people in the organisation support the change. This places emphasis on the leadership of an organisation to foster innovation, and to develop an organisational culture that supports innovation.

Technology is increasing the pace of change and having a major effect on a global basis. This has made many innovations possible, but it also has a negative side. For example, a focus on biotechnology, human genomes or nanotechnology, without also thinking about the implications for mankind, could lead to major difficulties for the human race. Innovation is not always desirable – it needs to be considered in terms of its effect on people and on the environment. The use of a purely economic approach to innovation does not take these factors into account. The growth of social innovation is an attempt to consider people and environment.

The literature also acknowledges that there are risks associated with innovation, especially when change is radical. Failure is an important part of the innovation process,

requiring a mindset that can accept this and look for new ways of moving forward. The government can play an important part in encouraging this mindset through the policies it develops to encourage innovation and entrepreneurship.

In conclusion, organisational innovation is the catchphrase of the moment and it comes in many forms. If innovation is to be attained there needs to be a balance between watching for trends, developing creativity and thinking strategically.

## **Conclusion**

The review of the literature has shown that innovation is distinctive from terms such as change management, invention and creativity, and that there are many approaches taken to innovation. The literature has highlighted the two branches of thinking regarding innovation – a rational approach and an organic approach. The organic approach is one which is of particular relevance to this case study because it recognises innovation as messy and non-linear. This lends itself to an open-ended qualitative approach to research.

Factors influencing innovation have been identified from both a macro and micro level. The literature review shows that there is an abundance of literature in the area of innovation and the rate at which people accept innovation. The difference between incremental and radical innovation provide a useful starting point for discussing participants' views on whether what they are doing is radical – creating the new and involving systemic change. This is critical to the exploration of the first research question.

The literature review also noted similarities between the implementation of innovation in business and in education, with the main differences being the influence of parents, wider society and the Ministry of Education on schools. These influences provide added barriers to the extent of innovation in education. In the research undertaken these barriers will be compared with those identified by the participants of the study. This will provide a useful reference point when comparing the two schools with other schools and with innovation in the wider business setting.

There is a great deal of rhetoric in education around the idea that schools need to change substantially in order to cater for the future needs of students (Beare, 2001; OECD,

2001). Continuing research into innovation is essential if schools are going to be provided with examples of how innovation might happen in practical terms and how leaders can contribute to innovative practice. This research provides some insight into 'how' schools can change and what helps and hinders attempts to innovate, providing valuable information for others trying to make change in schooling a reality.

This research contributes to the literature by providing the only published work on these two 'designated schools' and by being the only study undertaken of the leadership of these two schools. At a time when the Ministry of Education is increasing support for the use of ICTs in NZ schools, this research provides valuable information about how ICTs can influence this innovation. In this respect Figure 7 (p. 41) conceptualises the way in which ICTs can influence the development of radical innovation in schools.

The two 'designated character' schools have been used as the vehicle for this study because they were set up to try to innovate from their foundations. In this respect there may be elements of innovation that are more readily observed than in other schools. Chapter Three explores the research design and methodology that was used to study these two schools.

# CHAPTER THREE

## RESEARCH DESIGN AND METHODOLOGY

### Introduction

Chapter Two outlined the literature on innovation. A further body of knowledge, related to methodology, was also explored as a key part of this research. Chapter Three discusses the theories underpinning the research, methods of data collection and analysis. The Chapter begins with a situational analysis of the two schools used in this study. This provides the context for the study and enables readers to have a clearer picture of the physical, social and cultural natures of the schools.

### **Situational Analysis of *Discovery 1* and *Unlimited Paenga Tawhiti***

This section provides further information about the study sample in terms of the schools and the directors, in order to give more information about the context for the research, using situational analysis principles (Marsh & Stafford, 1992). Situational analysis is the process of examining the context in which the school operates including such areas as the characteristics of the schools, their staff and students (Brady & Kennedy, 2003).

#### *Discovery 1*

The primary school occupies three floors of an inner city office block. It is above the major bus station, so is easily accessed from all parts of the city. The three floors consist of mainly open spaces, with few private spaces. The entrance leads into an area with a lounge on one side and a kitchen on the other, to give the feeling that you are entering into a home rather than a school. These areas tend to be a meeting place for students and adults.

The school has been allocated a decile rating of 6 (where 1 is lower socio-economic and 10 is higher socio-economic). The school population consists of the following ethnic groups – 85% NZ European, 5% Maori, 2% Samoan and 8% other. Students come from all over the city, including nearby rural areas, although some days students may be working offsite on projects or working from home. The school has had to develop sophisticated systems of accountability to allow this to happen. Students come from a variety of places including other state schools, alternative schools, private schools, home schooling and entry as five year olds to their first school. They come because their parents are seeking something different from what they see traditional state

schools can offer. Some of the families coming to the school had had their names down for two years prior to the school being opened, while others are new.

The school was required to grow to 200 students, which it did in 2004. However, the school felt that the pressure of the extra numbers on staff and facilities was too high and they have asked to reduce numbers for the future. This has not been granted as yet, leaving staff frustrated and believing the staff/student ratios are too high. There is also the feeling amongst some staff that the extra numbers have compromised the special character of the school. Children and families are interviewed for places in the school and must be able to demonstrate that they will thrive in the school but some of the new students are struggling in the new learning environment. With twenty plus new students the school culture has had to be re-established.

The school's first ERO review was completed in August 2002. It stated:

The school's programmes are underpinned by a sophisticated educational vision that focuses on developing learner-centred, experience-based curricula, consistent with national curriculum requirements. Programmes promote students' development as life long learners. The ERO review evaluated the quality of curriculum and the learning environment, performance management and strategic planning. This report acknowledges positive performance in all of these areas. The establishment board, current trustees, the principal, learning advisers, students and parents have developed a sound foundation for realising the school's unique and innovative educational vision. (Education Review Office, 2002)

The school staff consists of eight teachers (including the director) and one office administrator. Of the staff, six have been there since the school opened. The others have been at the school for shorter periods of time. There has been a considerable turnover of other staff during the three years in which the school has been opened. Workplace stresses are considered to be one factor contributing to turnover, but the school has just started to keep more accurate data on this. The senior management at the school has remained largely stable.

The school has had an initial Establishment Board, an elected Board of Trustees and now a newly elected Board of Trustees. The school is going through a more settled period, where the Board, Director and staff are working together. There have been ongoing tensions between staff, Board and parents over the three years. These tensions

arise because of the special character of the school and the different interpretations that different groups and individuals place on that special character.

In the initial stages of the school's development *Discovery I* worked extensively with researchers from the local university. While this is not now happening to the same extent, there have been several pieces of research conducted and these were referred to during my own research. As researcher, I have been involved in setting up *Discovery I* and served on the Establishment Board of Trustees. In mid-2004 I rejoined the Board as a representative of the NZ Learning Discovery Trust. Two trustees serve as non-elected Board members, with the role of preserving the special character of the school.

#### *Unlimited Paenga Tawhiti*

This special designated character secondary school is across the car park from the primary school and hence has many of the same features. It occupies two levels, but also leases a nearby basement, which has been developed as a visual and performing arts area. A purpose-built school of six storeys has just been completed to add to the existing facilities. Although there are large areas of open space in the facilities there are also more areas where students can work in smaller groups. This reflects the variety of approaches to curriculum delivery.

Before the school opened, a director was appointed to oversee the organisational set up of the school. This director, a principal of another state secondary school, was employed for .5 (half time). Two further directors were appointed before the school opened. One of these was a full time director who had been principal of an area school, and the other was employed .5, having recently resigned from the principalship of a private school. The directors worked together for the first year of the school's existence, after which the original director moved out to other employment. During 2004 and 2005 the other two directors continued (one full time and one half time), working collaboratively to develop the school further. The directors indicate that this shared leadership works really well for them and that they complement each other's skills.

During the period of this study the school continued to be in a growth phase, with 10 rising to 16 staff employed, including one full time office administrator and several part time office support staff. While teaching staff have various responsibilities and management units to support responsibility, the school has deliberately tried to keep the

school structures non-hierarchical. There is no clear delineation of staff 'seniority.' The staff employed includes a mixture of full and part time staff, with most being responsible for a homebase<sup>4</sup> of no more than fifteen students, as well as having curriculum teaching responsibilities.

The importance of homebase relationships means that this is also a focus when choosing new staff. All prospective staff must take part in a presentation to the community, and have the opportunity to watch each other present. Students, staff and parents have the opportunity to interact with the candidates informally and to ask them questions. Feedback is gained from the students, staff and parents before final candidates are selected for interview. The Board interviews candidates and makes the final decision. The process requires feedback from key stakeholders but it is not a democratic process where the community decides. A similar process is followed for *Discovery 1* appointments.

### **Theoretical Framework Guiding the Study**

The theoretical framework for this study is based on the stages of change leading to innovation/transformation (Kanter, 1977), as discussed on page 24; and the Stages of the Implementation of ICT (Russell & Finger, 2004) as detailed in Table 1 (p.9). These have been combined with the summary of the driving and inhibiting forces that affect innovation. These forces either encourage innovation to be more radical (driving forces) or pull back to the status quo (inhibiting forces), as shown in Table 6. The driving and inhibiting forces represent a summary of the literature presented in the previous section on Drivers and Barriers to Innovation.

The focus on radical innovation for this study suggests that the data gathered will facilitate an analysis of cultural change, where the organisation is focused on innovation and where ICTs change the nature of schooling.

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A group of students who form a learning community with a learning advisor



Both driving and inhibiting forces can be divided into three types – individual, organisational and external. Individual forces relate to the background of the individual and the beliefs they hold, and the interactions they have with their environment. Organisational forces relate to the cultural elements that make the organisation unique and the resulting structures of the organisation. External factors may include external stakeholders, over whom the school has some influence (such as parents), but it also includes governments and the wider effects of such things as technology and globalisation. These factors are largely out of the control of the individual or organisation.

The theoretical framework suggests that innovation is radical when it is concerned with organisational change, or change that completely disrupts the status quo. When ICTs are added to this there is the possibility that innovation can be strengthened to transform the nature of schooling in new ways. Reducing the inhibiting forces and strengthening the driving forces moves innovation closer to becoming radical.

The research by Gilbertson *et al.* (2001) has been used as a main source of factors influencing innovation, supplemented from other research cited in the literature review. The theoretical framework has been used to determine the type of data collected and the research questions asked.

## **Research Questions**

The key guiding research questions of the proposed study were:

1. what do the directors see as radical innovation in these schools?; and
2. how is the use of ICT implicated in innovation in schools?

To achieve this, the main supporting objectives of this research were to:

- to identify the features of radical innovation in schools;
- to explore the barriers against, and drivers for, innovation to occur in schools;
- to provide insight into the use of ICTs to influence innovation in schools;
- to contribute to the literature regarding innovation in schools; and
- to identify future opportunities to innovate.

Supporting research questions were drafted, with reference to the literature on innovation and my understandings of the intention of the ‘designated character’ schools. That is, since the schools were set up to be different, and to be more focused on innovation and ICTs what things may have affected innovation and how might they be different to what was happening in other schools? As part of the research design was to include input from the directors the questions were initially created in draft format. Subsequently, these were checked with the Directors and alterations made, as reported in more detail in Chapter Four. The guiding questions are detailed below. The additional question established through discussion with the directors is shown in italics. The brackets following the question refer to the supporting objective that is developed through this question.

### **Guiding and Supporting Questions for Key Research Question 1 -**

- What implications and issues can be identified from of the literature regarding innovation in schools? What might be radical? (Identify the features of radical innovation in schools).
- What are the participants’ perceptions of innovation? (Identify the features of radical innovation in schools).
- What factors influence/affect innovation in these schools (social, technological, political)? What keeps it going/works against it? (Explore the barriers against, and drivers for, innovation to occur in schools).
- What innovations did they plan for their school and what happened in reality? (Explore the barriers against, and drivers for, innovation to occur in schools).
- *How can we tell if innovations are successful?*

### **Guiding and Supporting Questions for Key Research Question 2**

- Why is ICT important in these schools? (Provide insight into the use of ICTs to influence innovation in schools).
- What role does ICT play in the innovative environment? (Provide insight into the use of ICTs to influence innovation in schools).
- How prominently does ICT figure in the creation of innovative practice? (Provide insight into the use of ICTs to influence innovation in schools).

The remaining objectives – contributing to the literature regarding innovation in schools; and identifying future opportunities to innovate – will be outcomes of the research synthesis.

## **Research Design**

The approach to this study is based on relationships, interactions and the meaning we assign to things. Perception functions as a meditative experience for the individual in the relationship between himself/herself and the social environment (Meltzer, Petras & Reynolds, 1975: 52).

Meaning emerges from social processes. There is no separate self, in that self awareness means that we have awareness of others. Humans are best understood in relation to their environment.

The questions asked in this research are designed also to help the participants understand and interpret their understandings. In the data analysis, the elements of symbolic interaction were employed in interpreting results. These are now explained.

Symbolic interactionism is based on the work of Blumer (1969), who was influenced by Mead and Dewey. The three principles of his theory are as follows:

1. **Meaning** – humans act towards people and things based on the meanings they have given to those people or things. Meaning is central to human behaviour. This making of meaning is a community based project.
2. **Language** gives people the means to negotiate meaning and develop discourse. Meaning arises out of our social interactions.
3. **Thought** modifies an individual interpretation of symbols. Thought, based on language, is a mental conversation or dialogue that requires role taking, or imagining other people's viewpoints (McClelland, 2000).

Therefore, in undertaking this research there was an emphasis on the viewpoints of the directors and how they made meaning based on their environment. The research design included two occasions where the participants came together to discuss, clarify and negotiate meaning. A focus group discussion during the last stage of the research project provided an opportunity for the participants and I to share each other's viewpoints and modify ideas.

Table 7 shows the research design overview and indicates why these data sources may be justified. Symbolic interactionist principles also influenced the analysis of the data. This was completed through regular interactions with the participants as shown in the trustworthiness column.

**Table 7: Research Design Overview**

Guiding Questions		
Data Sources	Justification	Trustworthiness
What implications and issues can be identified from contemporary examples of innovation in schools?		Multiple sources of information will be gained through the four directors involved in this study, through the six month period involved in the research, and across the two school sites through a lens of symbolic interactionism.
<ul style="list-style-type: none"> <li>Literature review</li> <li>Concept mapping</li> </ul>	<p>This will explore what is said about innovation in schools, with a particular focus on institutional innovation.</p> <p>Concept maps will establish how many of these issues were identified by the directors</p>	
<p>What factors influence/affect innovation in these schools (social, technological, political)? What keeps it going/works against it?</p> <p>What are the participants' perceptions of innovation?</p> <p>What innovations did they plan for their school and what happened in reality?</p> <p>Whose interests are served by these innovations and in what ways?</p>		<p>Multiple methods of collecting data – literature study, concept mapping, interviews and focus group. Opportunity for participants to interact with the researcher and with each other.</p> <p>Fourth generation evaluation techniques to involve the participants in the design of the research.</p> <p>Member checking will occur throughout the research.</p> <p>Participant voice.</p> <p>External audit by peers will be conducted once concept maps and interviews have been analysed.</p> <p>An audit trail provided by a chain of evidence.</p>
<ul style="list-style-type: none"> <li>Concept mapping generated at the beginning of this study</li> <li>Interviews will follow concept mapping</li> <li>Focus group</li> </ul>	<p>Concepts maps generated at the beginning of the study will identify the participants' views of innovation in schools. This will be analysed in light of themes and compared to what the literature says about innovation in schools</p> <p>Interviews will provide the opportunity to develop emerging themes and provide information regarding the participants' experiences with innovation in their schools. For each of the innovations mentioned participants will be asked why they do that and how they go about doing it.</p> <p>This will review findings to date, with the opportunity to comment on how the schools are living up to their charter requirements to innovate. New understandings will be shared and implications for the future discussed.</p>	
<p>Why is ICT important in these schools?</p> <p>What role does ICT play in the innovative environment?</p> <p>How prominently does ICT figure in the creation of innovative practice?</p> <p>How do the directors try to ensure that ICTs are used how they want them to be used?</p> <p>What dimensions of ICT use are evident in innovation in these schools?</p>		
<ul style="list-style-type: none"> <li>Concept mapping may highlight use of ICTs.</li> <li>Interviewing</li> <li>Focus group</li> </ul>	<p>Concept maps generated at the beginning of the research will be used as discussion points during the interviews.</p> <p>Interviews will allow the researcher to discuss how ICT is used in these schools, and whether there is anything different being done compared to the schools that the directors were previously principals of.</p> <p>Given the nature of these schools, where ICT is pervasive and explicit, the opportunity to compare practices between the two schools will clarify what is seen as innovative use of ICT and whether this is the same between the primary and the secondary school.</p>	

Table 7 shows the ways in which the data were gathered for the various questions being asked and why these methods of collecting data were used. A general overview of innovation was gained through the literature review. Questions relating to innovation in

the case study schools were gathered from concept mapping, interviewing and a focus group activity. These data sources were also used to find out specific information about the use of ICTs in these schools.

The research design also shows how I ensured trustworthiness in the process. This was of major importance given my role as a board member of both schools and my ongoing working relationships with the directors. Trustworthiness is discussed in more detail on Page 72.

## **Methodology**

As Table 7 shows, the research methodology for the study developed from a qualitative research paradigm. “Qualitative methods explicitly identify a person’s understanding of the situation as something to be discovered rather than assumed” (Ezzy, 2002: 45). Qualitative methods allow the design of the research to emerge as the study progresses.

The two schools being studied, both ‘designated character’ schools, were chosen because they were set up to be institutionally innovative. As researcher I was a participant observer in these schools, being on the Establishment Board of both schools, and being on the Learning Discovery Trust, which set up the schools. Therefore, I examined people in the natural settings of the schools being studied to explore the “culture from the inside” (Lindeman in Bogdevic, 1992) to “provide direct experiential and observational access to the insider’s world of meaning” (Jorgensen, 1989: 15). Some document analysis was also carried out as part of the data collection.

The research was multimethod in focus. Using symbolic interactionist principles, I was not seeking to identify objective truths, but rather to explore the participants’ views as they interacted with other people and with the environment to make sense of their world. From these constructions I was able to compare ideas and to share these back with the participants so that further ideas could be developed.

The use symbolic interactionism as the methodology reflects the complexity of the schools being studied, the participants involved and their interactions with the discovery learning environments. In this respect, the schools have been set up based on a discovery learning philosophy where it is intended that individuals create their own meaning, and learning programmes are to be designed with this in mind. The

participants, including the researcher, work in these schools based on the assumption that they share similar beliefs about learning and they are constantly interacting to develop their understandings further.

A case study approach was used for this study. Merriam (1988) characterises a case study as “the discovery of new relationships, concepts, and understanding, rather than verification of predetermined hypotheses” (p. 14). Merriam (1988: 11) identifies four characteristics as being essential properties of a case study - that they are particularistic, descriptive, heuristic, and inductive.

According to Merriam (1988: 11–13), particularistic means that the case study has a particular programme, event or phenomenon as its focus. Descriptive relates to the end product of a case study in which a detailed description of the focus of the study is provided. Heuristic means that case study aims to illuminate the audience’s understanding of the phenomenon being studied. Finally, inductive means that, generally, a case study relies on inductive reasoning in which generalisations, concepts, or hypotheses emerge from the process of data examination. This study of the two ‘designated character’ schools provides: a full description of the schools, an illumination of the audience’s understanding of the purpose and development of these innovative schools, and inductive reasoning in dealing with emerging issues from the data collection processes.

It is recognised that the views of the researcher and participants are filtered by individual experience and background (Denzin & Lincoln, 1998). Since, as researcher, I was part of the learning communities, it was essential that participants felt at ease with the methodology and research generally and believed that a partnership existed, with the research being useful for all taking part. This led to the identification of fourth generation evaluation as a supporting methodology. “Fourth generation evaluation is a form of evaluation in which the claims, concerns, and issues of the stakeholders serve as organisational foci (the basis for determining what information is needed)” (Guba & Lincoln, 1989: 50).

Reasons for involving the stakeholders in the process include:

1. since stakeholders are placed at risk, in the interest of fairness, they deserve to have input into, and control over, the process; and

2. the inclusion of inputs by the stakeholders can broaden the scope of the research and make the inquiry more meaningful.

My degree of involvement with the schools had potential to influence the study, however the methodology used attempted to minimise this by allowing the participants to have a voice, and by the regular checking of findings with them. Trustworthiness and ethics were of prime importance in this study, as detailed later in this Chapter. Document analysis and observations have also been used to clarify and provide examples of innovation in practice.

The research aimed to treat those interviewed as individual human beings, rather than manipulating them for the researcher's own outcomes (Oakley, 1981). While this research did not specifically discuss my own experience as part of the research (Ezzy, 2002) it did recognize that "the personal experience of the researcher is an integral part of the research process" (p. 153). As researcher, I have not included my personal experiences of the school environments but my thoughts have been written in field notes and influenced my thinking. While acknowledging my participation in the research and the role that my interactions played with the participants, it was the voices of the directors that I wanted to be heard. My participation aimed to be implicit rather than explicit.

## **Data Collection and Analysis**

### **First Phase**

Phase One of this study involved the completing of a literature study in the relevant areas of innovation and ICTs. This material is presented in Chapters One and Two and includes background information regarding the establishment of the schools, the political environment that allowed the schools to be developed, the timeline of events and the philosophy underpinning the schools.

The four directors involved in the study met with the researcher in an initial meeting. Fourth generation evaluation (4GE) methods were used to discuss the literature review findings and to look at the main questions underpinning the research. The guiding questions were discussed by the participants and they were involved in the process of developing the final supporting research questions. By negotiating the questions to

benefit the whole group, opportunities were provided for developing greater ownership by participants, who were able to co-construct the study.

## **Second Phase**

Once questions had been finalised, data were collected through the use of concept mapping and semi structured interviews. These provided the main sources of information from participants.

### *Concept Mapping*

Concept mapping is a useful tool in a constructivist context in that “it is argued that academic learning is an active process by which students construct their own knowledge in the light of their existing knowledge and through the process of interaction with the interpretation, integration and transformation of their experiential world” (Gravett & Swart, 1997: 122). In this research, the concept map was used to gather initial data regarding directors’ perceptions of innovation and also to investigate variation between the directors (Wilson, 2001).

Individual perspectives regarding innovations in their environment were developed through the use of concept mapping with the four directors, individually. I was present to clarify any points. The concept mapping used was non-structured in approach (Meijer, Zantig & Verloop, 2002). That is, participants were asked to generate concepts related to the question - “How is innovation developed in your school?”

In using concept mapping techniques, participants were given an example of a concept map and a set of instructions for constructing a map. These were drawn from Daley’s work with adult students (Daley, 2002: 23). Participants were able to construct their maps using *Post-it* notes and paper, or to complete the exercise on the computer, using *Inspiration* software. While some of the participants were highly confident in using this programme, others were not. The mapping exercise focused on the concepts rather than the mechanics of the process, so the choice of technique was unimportant. Concept maps created with *Post-it* notes were reproduced by me, using *Inspiration*, then given back to the directors to check and change, if necessary.

Concept mapping was used as “a schematic device for representing a set of concept meanings embedded in a framework of propositions...which helps facilitate an

understanding of conceptual relationships and the structures of knowledge” (Daley, 2002: 22). As shown in Table 8 below, Daley highlights three important elements needed in order to create concept maps:

**Table 8: Important Elements in Creating Concept Maps**

(Source: Daley, 2002: 22)

Element	Purpose
Lower-order concepts are listed under higher order concepts	Helps the learner “understand the nature and structure of knowledge”
Concepts become progressively more and more complex in structure	Ideas are developed to the smallest pieces or subsets as ideas are developed
The process of ‘integration reconciliation’ is used to create horizontal links	Horizontal links show how the learner synthesises conceptual information while creating his/her “own unique meaning structures”.

Elements become progressively more complex as mapping proceeds, starting with key ideas and hierarchies and progressing to complex connections between various elements. It is as ‘integration reconciliation’ occurs that the participants’ own understandings and ideas are articulated and connections between ideas are established in ways that make sense to the individual.

Concept mapping was used in this study to establish initial ideas regarding how the participants organise their knowledge about innovation and what relationships they perceive between the various components of the map. It was seen as an appropriate tool given the symbolic interactionist nature of this study for, as Jones and Vesilind (1996) contend, concept mapping is particularly useful to those, “who seek insight into how individuals construct their own idiosyncratic concepts” (p. 93). This insight provides information regarding the participants’ interpretation of symbols and the way they create meaning based on their interactions and experiences (McClelland, 2000).

One of the advantages of concept mapping is that, rather than being linear, it can be hierarchical, or complex in its formulation (McLay & Brown, 2001). Maps are also useful in showing how people grasp the relationships between concepts (McLay & Brown, 2001) and as a tool for identifying perceptions of aspects of teaching that are seen as more, or less, important (Meijer, Zantig & Verloop, 2002). Concept maps have been used to demonstrate what is known or believed about a topic (VanLeuvan, 1997). They allow the participants, and the researcher, to find out more about the theoretical orientation of the mapmaker (Mergendoller & Sacks, 1994).

In their analysis of concept map data, Trent, Pernell, Mungai and Chimedza (1998: 4) used the following steps:

- developed tentative categories from the concept maps;
- began integrating categories and their properties, looking for rules and commonalities;
- as each map was added to the research it was checked against the categories and either entered into existing categories or a new category/subcategory was created;
- when all concept maps had been analysed the overall results were reanalysed and revisions made; and
- findings were compared and any inconsistencies discussed.

The above steps were used in analysing the concept maps collected in this research.

#### *Semi-structured Interviews*

All four directors took part in individual semi-structured interviews to further explore their beliefs about innovation and their experiences in innovative practice at their new schools.

The initial questions were based on understandings developed from the literature on innovation (Gilbertson *et al.*, 2001). The initial draft questions were as follows:

1. Why did you come to Discovery/Unlimited? (To gain information about background of the participants and what attracted them to the schools).
2. What do you consider innovative practice here? What is the same or different from your last principalship?
3. Has your view on how schools can innovate changed since working here?
4. What has been your most successful innovation? Can you tell us the story from where the idea first originated? (What innovations did you set out to achieve? Where did the idea come from? What actually happened?)
5. What have you tried that didn't work? Why?
6. What part do others play in innovation here? (What did the people do?)
7. What has helped/hindered innovation? (How are innovations resourced?)
8. What external influences have affected the ability to innovate, both positively and negatively?)

Participants had a copy of the negotiated supporting research questions available to them. When questions were covered by the participant they were not asked directly, but clarification or amplification was sought. Interviews were an interactive conversation. Since I knew the participants well, the interviews conducted were more like conversations between friends (Bogdan & Biklen, 1998). In this study, I aimed to be seen as one of the community, in which “conversations are marked by equality among participants and by flexibility to allow group participants to establish the form and topics important to their inquiry” (Denzin & Lincoln, 1998: 168). Although I was aware that my role as a Board member of both schools could place limitations on the subjects’ responses, transparent processes and clear ethical procedures, along with an established positive relationship with each director, helped to minimise these limitations.

The interviews were taped and transcribed for analysis. Before being entered into the database they were given back to the individual directors for checking and modifying.

The advantage of using a semi-structured interview approach is that there was some comparable data between those interviewed. During these interviews I was seeking to understand, in considerable detail, how people think and how they came to develop the particular perspectives they hold (Bogdan & Biklen, 1992). Coming from a symbolic interactionist perspective, I was particularly interested in how the participants interacted with their environment, and the people within it.

The disadvantage of this is that “you lose the opportunity to understand how the subjects themselves structure the topic at hand” (Bogdan & Biklen, 1998: 95). In this case both participants and researcher are *active*, in that both help create meaning (Silverman, 1997). To counter this I attempted to give the participants latitude to take the question in whichever direction they pleased, without a rigid process to follow. It was also acknowledged that the interviews were collaborative in ways that are “more sensitive to the social construction of knowledge” (Holstein & Gubrium, 1997: 114).

In using symbolic interaction as the underlying theory for the research, there was a focus during the interview on the *how* of interviewing – the “interactional, narrative procedures of knowledge production, not merely to interview techniques” (Holstein & Gubrium, 1997: 114). There was also a focus on the *how* of the interview – the issue,

content of questions, “and the substantive information communicated by the respondent” (Holstein & Gubrium, 1997: 114).

Once the results had been summarised I asked two research colleagues to review the findings, meeting with them over a three hour period to discuss my research. This was undertaken to check whether coding was accurate and initial observations credible. This checking from an external source provided another way of ensuring findings were credible (Guba & Lincoln, 1989). Peer debriefing is outlined in more detail later in this Chapter, when discussing trustworthiness.

The two research colleagues were chosen because of their academic backgrounds as doctors of education and their understanding of the techniques being undertaken for this research. They were from different educational backgrounds and institutions – one with many years research experience overseas and the other having completed doctoral studies in the last year.

The meeting resulted in rich discussion of findings and the need for me to answer questions about the decisions I had made, thus helping to clarify my thoughts. It also challenged me to explore new ideas and make some changes where the ideas presented needed tightening or rethinking. The log notes from the discussion can be found in Appendix 4.

### **Third Phase**

#### *Focus Group Discussion*

Once concept maps and interviews were completed, and tentative themes were drawn from the data, the four directors participated in a focus group to discuss general findings and made further comment regarding the research outcomes. Although there were some particular questions asked as points of clarification, the aim was to have an overall discussion of the research findings (Anderson, 1990). This also involved discussions regarding possible uses of the research and next steps. The focus group discussion was taped, in order to gain “a full record of potentially rich data” (Anderson, 1990: 246).

Vaughn, Schumm and Sinagub (1996) describe the major assumption of focus groups as that with “a permissive atmosphere that fosters a range of opinions, a more complete and revealing understanding of the issues will be obtained” (Vaughn *et al.*, 1996: 4).

The goal for focus groups is not to gain consensus but to find out what different points of view and feelings the participants have. “The goals are to elicit a greater, more in-depth understanding of perceptions, beliefs, attitudes, and experiences from multiple points of view and to document the context from which those understandings were derived” (Vaughn *et al.*, 1996: 16). Since the use of focus groups was the last data gathering tool used, it presented the participants with the opportunity to “provide their interpretation of the findings or suggestions for further research” (Vaughn *et al.*, 1996). It served the purpose of member checking and involved participants in the development of the findings.

The advantage of the focus group was that it could provide rich data, could be flexible and dynamic (Vaughn *et al.*, 1996). The interaction between participants added to the conversation, as respondents were stimulated by others, elaborated ideas, and created a synergy of ideas over and above that obtained by individual responses (Denzin & Lincoln, 1998: 55). It allowed for the synergy of the group to add depth and insight (Anderson, 1990).

Disadvantages of this approach were that it could stifle individual expression or allow some members of the group to dominate. “Group think” could also occur. To counteract these disadvantages I needed, as researcher, to have skill levels capable of drawing out respondents and encouraging all to listen, and be heard. Disadvantages were minimised by the transparency of the research process, and the negotiated ownership of the questions.

In research undertaken by Wilson (1997), it was found that “focus group participants took on the role of consultants to each other; by listening, mirroring back what had been said and generally facilitating each other’s understanding of the issues” (Wilson, 1997: 220). It was expected that the participants in this research would take an active role in this way.

### **Trustworthiness of Data**

In this research, trustworthiness of data is achieved using the four criteria of credibility, transferability, dependability, and confirmability (Lincoln & Guba, These criteria are summarized in Table 9.

**Table 9: How will Trustworthiness be Achieved?**

(adapted from Henwood & Pidgeon, 1995; Guba & Lincoln, 1989; Lincoln & Guba, 1985)

Component of Trustworthiness	How this will be achieved
<b>Credibility</b> – the match between the constructed realities of the participants and those realities as represented by the researcher and attributed to the various participants	<i>Prolonged engagement</i> – substantial ongoing involvement with both schools and their directors (as a board member and a colleague) <i>Persistent observation</i> – continued referral back to the data collected <i>Peer debriefing</i> – discussion of findings, conclusions and tentative analyses with two critical friends. This to be conducted once concept maps and interviews have been analysed. <i>Member checking</i> – presenting data back to participants to check its accuracy; testing categories and interpretations with participants at Stage Four of the research. Final member check prior to submitting final research for errors of fact or interpretation.
<b>Transferability</b> – the ability to generalize or for others to apply this study to their own situations	Provision of extensive and careful description of all aspects of the research.
<b>Dependability</b> – the stability of the data over time	Shifts in thinking will be recorded as an audit trail, allowing others to see the process undertaken, understand the contexts in which decisions and interpretations were made, and check how the conclusions were arrived at.
<b>Confirmability</b> – data, interpretations and outcomes come from the data not the researcher’s own imagination.	Sequenced documents will be available in appendices so that they can be inspected and confirmed by others (also refer to member check) as being able to be traced back to original sources.

In constructing the research it was important to include all four components of trustworthiness so that data were represented as much as possible from the viewpoints of the participants, processes were transparent and participants safe. This was especially important given that the schools to be studied were easily identified as the only schools of their type in New Zealand. Fourth Generation Evaluation Techniques made the participants’ role in the research explicit in terms of co-construction of the questions. By using this approach, the participants were all stakeholders in the process, and in effect, the research became theirs. Informed consent, right to privacy and the ability for participants to withdraw from the research at any time, were emphasized from the outset (see Appendix 2).

“A comprehensive member check and an external audit” (Denzin, 1998: 331) were considered to be of critical importance in minimising any potential bias: “Verification entails checking for the most common or most insidious biases that can steal into the processes of drawing conclusions” (Huberman & Miles, 1998: 198). This was seen as an important part of the authentication process, especially given my involvement with the school.

## **Ethical Considerations**

The directors taking part in this study were all approached individually and expressed an interest in taking part in this study. Ethical clearance was obtained from Griffith University as a prerequisite for this study. Informed consent mechanisms followed guidelines set out by Griffith University and, including references to the handling of concerns or complaints. These were printed on Griffith University letterhead and signed by the four participants before the study commenced (see Appendix 2). These consent forms were given to the participants at the initial meeting, after they had had the research explained to them and had had any questions answered.

A form was also given to the Boards of Trustees of each school seeking approval of the research. These were signed and returned to the researcher. Since only the directors of the schools were directly involved in this study there was no need to seek other approvals.

Ethical clearance was obtained after providing examples of some indicative questions and areas of thematic interest for the data collection, in order to provide a sense of the most intrusive or ethically sensitive line of questioning. Clarification was also given regarding what data was to be collected and how. As a result of feedback, information regarding data storage was added, indicating that audio tapes would be erased following transcription and analysis.

The other issue raised as part of the ethical clearance process was related to confidentiality of the stakeholder and how dissent would be acknowledged in the outcome. I was aware that the study might produce information that was sensitive to the individual or to the particular school. This was discussed openly at the initial meeting and it was agreed that if this occurred, I would work closely with the individual concerned to develop a way forward and that my supervisors would be used for guidance in this area, as needed. Feedback from the ethics committee indicated that as long as informed consent materials forewarned potential participants, and discussed how such information would be handled there was no issue. It would only become an ethical issue if the information could become known to third parties and then impact negatively upon the participants.

Participant involvement, through the use of fourth generation evaluation methodology (as outlined earlier in this Chapter) meant that this was extremely unlikely as participants helped create and develop the research. Lincoln (1990) suggests replacing informed consent with a dialogue that continues through the research investigation, with “the negotiation of research processes and products with one’s respondents, so that there is a mutual shaping of the final research results” (p. 286). This is much in line with the research design, where symbolic interactionist principles place an emphasis the construction of meaning created by the individual, as a result of their social interactions.

### **Data Analysis**

Data were analysed by entering information into HyperRESEARCH, a qualitative analysis software package produced by ResearchWare. HyperRESEARCH was used because of its capability to manage large amounts of information and to allow for indexing and searching. However, this was linked with other ways of analysing the data, for as identified by Ezzy (2002), “CAQDAS (Computer Assisted Qualitative Data Analysis) packages streamline the systematic and routine aspects of analysis, and this may provide a better foundation for the interpretive process, but they do not, and cannot, replace the interpretive, integrative, artistic and aesthetic components of the analytic process” (p.135).

Data were stored in HyperRESEARCH, then time given to coding, refining coding and establishing links between categories. Constant comparison of codes and the writing of ‘memos’ ensured that the theoretical claims made by the analyst were fully grounded in the data (Potter, 1998). Data were coded to answer the question: “What categories or labels do I need in order to account for what is of importance to me in this paragraph” (Pidgeon & Henwood, 1996: 92).

Once initial coding was complete these were examined in more depth using the following questions as a guide:

- what’s going on here?
- what are the surrounding conditions?
- how does the person feel, think, or act in this situation?
- how do things change? and
- what are the consequences? (Adapted from Charmaz, 1995: 39)

Thematic analysis was used to identify any resulting themes. Ezzy (2002) describes thematic analysis as being “More inductive than content analysis because the categories into which themes will be sorted are not decided prior to coding the data. These categories are ‘induced’ from the data” (Ezzy, 2002: 88). This allowed the researcher to explore issues and ideas that may not have been anticipated.

Open coding, where categories of analysis are not designed prior to the analysis, (Ezzy, 2002: 88) allowed emergent categories to be developed. This allowed for experimentation, and recognized the complexity of the task. Constant comparison was used, where I examined the differences in the use of each category according to the setting or the participants. This constant checking resulted in refining or reworking codes, merging and breaking up.

Throughout the coding and comparison, written notes based on the assumptions that underlie the codes were kept as memos. “Memo-writing is central to the process of building theoretical understandings from the categories as it provides a bridge between the categorization of data and the writing up of the research...In addition to the process of refining categories, a further analytic task involves linking categories together. The goal here is to start to model relationships between categories. Indeed, one possibility may be the production of a diagram or flow chart which explicitly maps relationships.” (Potter, 1998).

Once coding was completed I met with two critical friends, as discussed previously. They went through the coding and asked questions, sought clarification and made suggestions. I used discussion ideas to tighten coding and to develop core categories from which to develop emerging theory.

As theories emerged from the research there was a need to go back to participants to check ideas, make observations or analyse documents (Corbin, 1986). This is reported on in Chapters Four and Five.

# CHAPTER FOUR

## REPORTING AND ANALYSIS OF FINDINGS

### **Introduction**

Chapter Four is the first of two Chapters reporting on the findings of this study. The Chapter is divided into three sections. The first section outlines the results of the initial meeting with all four participants. Section Two takes each participant in turn and discusses their interactions. I believe it is important to hear the voices of each of the participants before identifying general themes from the data. The participants in this case study are very different in personalities and backgrounds. When the coding was completed there were emerging themes common to the group, but there were also differences between participants. These differences are discussed in this section of the dissertation.

At the end of Chapter Four, the summary draws together the initial threads of the combined participant interactions. The coding of data is presented as part of this information.

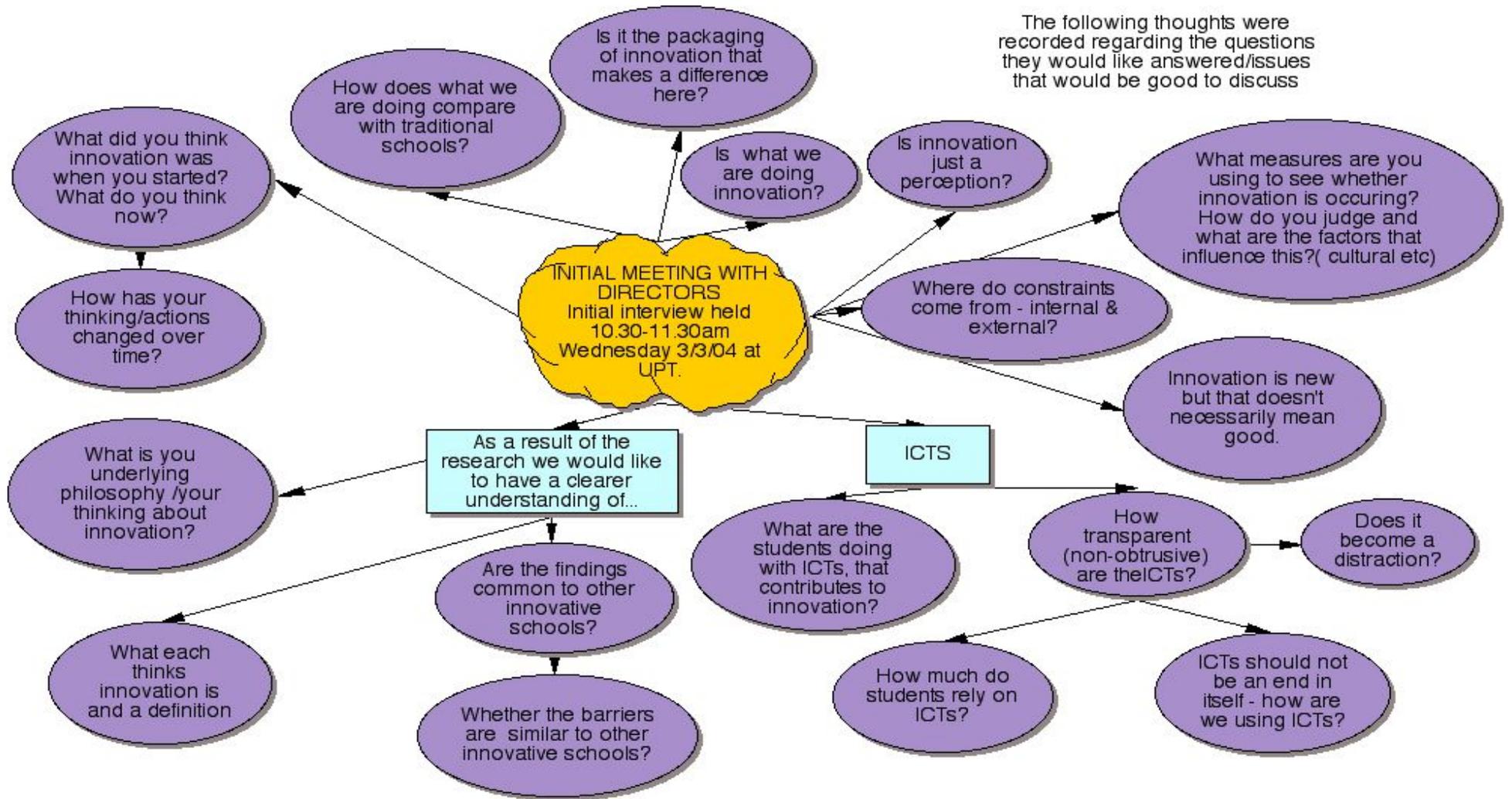
### **Initial Meeting with Directors**

The data were collected in three phases over a six month period. The first stage involved an initial meeting with the four directors. The meeting began with an explanation of the research and answering any questions regarding the process. It was also time for clarifying the role of me as researcher, and to reinforce their ability to withdraw from the research at any time. Given the intimate relationship between the researcher and the schools, this was crucial. We also discussed the procedure to be taken if there were any controversial issues arising from the research and how these should be dealt with. The participants were happy for the matter to be discussed openly and for a compromise to be made, if necessary.

At the initial meeting, the draft research questions were discussed and participants were invited to comment. Through this process we were able to develop some further questions that the participants would like explored. These were recorded using *Inspiration*, as shown in Figure 8. This ability to actively participate in forming the questions enabled the group to co-construct the research and hence for the research to

be potentially more useful to them as individuals, as well as to the researcher (Guba and Lincoln, 1989).

Figure 8 shows that the questions participants wanted answers to were largely similar to the draft questions already identified. The only question to be added was “What measures are you using to see whether innovation is occurring? How do you judge and what are the factors that influence this? Blue squares are used to indicate the two first level ideas, with second level ideas generating from these (purple ovals).



**Figure 8: Initial Meeting Discussions**

The initial meeting discussions indicated that, as researcher, my questions were of interest to the group. Follow up comments from all participants indicated that they had enjoyed the session and felt excited to be part of the research. They enjoyed the chance to help formulate the research questions and appreciated having the time to discuss the big picture, when they were often too immersed in the day to day running of the schools to do so.

A week after the initial meeting with all four directors, each director completed a concept map regarding their perception of innovation in education. The participants were asked the question, “What makes for radical innovation in education?” Participants were shown several examples of concept maps and invited to complete their own maps using either paper or *Post It* notes, or using the computer programme *Inspiration*. One person chose to use *Inspiration*. The three others completed their diagrams on paper and these were then transferred to *Inspiration* by me as the researcher. I also taped, with permission, the conversations undertaken during the creation of the concept maps and used these to verify any points that were unclear as the maps were replicated. The tapes were transcribed and used to help generate comments and points to follow up with during the interviews.

Once the concept maps had been replicated in *Inspiration*, they were emailed back to each creator for verification. This member checking was an important part of the process (Guba and Lincoln, 1989). In the transferring from paper to digital versions of participants’ concept maps, I used similar colours, connections and layouts to their original map. The colours themselves have no specific meaning, other than grouping participants’ ideas together, and there is no consistency between maps as they are particular to the individual participant. Any special features of concept map layout are detailed in the description accompanying each particular concept map. The individual concept map results are discussed in the next section labelled *Participant Interactions*.

## **Participant Interactions**

In this section, participants are discussed firstly in terms of their concept mapping, secondly in terms of the interview, and finally, general points are summarised. Each participant section begins with a quote from the participant. The quotes are taken from the coded area that the participant most referred to, and I have added them because I think they provide a connection with the participants and their thoughts.

## **Participant 1**

*“The starting point is where the student is, what they’re interested in, what their passions and interests are and then trying to package around that the curriculum that will suit”. – Participant 1 (22/3/04)*

### *Concept Map*

Participant 1 (P1) divided the concept map into three parts – people (purple), student learning (pink) and philosophical ideas (green), as shown in Figure 9. Arrows represent P1’s view of how the parts interacted or affected each other. The red arrow was drawn to show P1’s view that the main drivers of the initial innovation in the school were those people who started the school, since they were prepared to push the boundaries. P1 saw *radical* innovation as being fundamentally different from innovation. According to P1, while some innovation could occur in any schools, this was just tinkering around the edges. Radical innovation needed to come from a different premise other than just constant change and that premise should be driven by meeting the needs of students for the future.

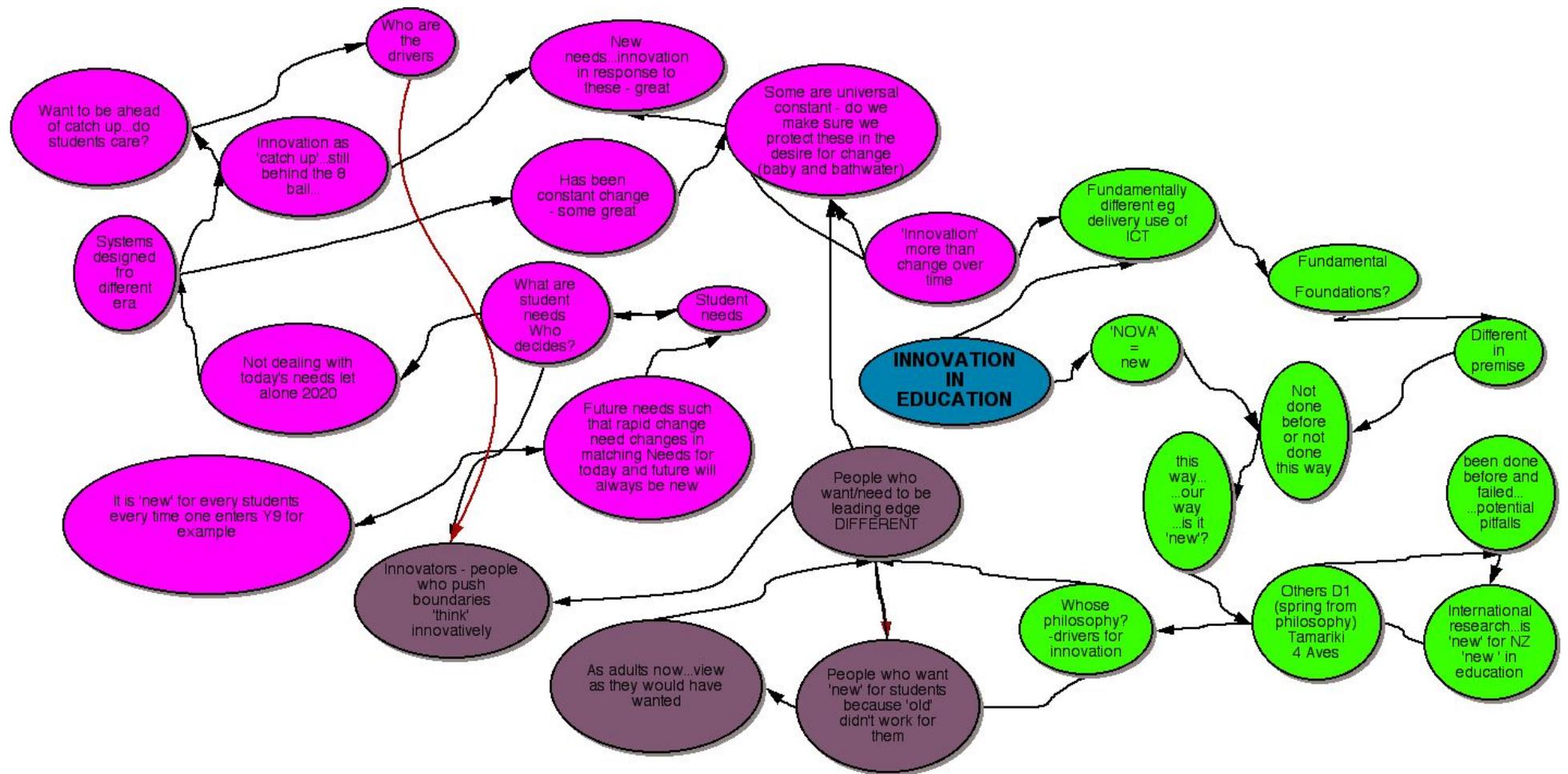


Figure 9: What is Innovation in Education? - Participant 1

Student needs were considered as a key driver, as evidenced by the number of circles under this heading (pink). P1 felt that the current system was not meeting the needs of many of today's students, let alone catering for the needs of students in the future. However, there was also recognition that we should not "throw out the baby with the bathwater" but should keep the things that do work. There has been a great deal of knowledge gained about adolescents and about learning that is universally understood and accepted.

P1 questioned who decides what that learning should look like. While the school focuses on student centred learning, many of the decisions regarding what will happen are driven by the adults. The innovative people tended to be those who had driven the school forward and he questioned whether or not students were innovative at this stage. Innovative people were seen as those who were thinking of the future and had a vision to get there. These people form one part of the school community. Others may be less innovative but have been attracted by the school because traditional schooling had not met their needs in the past.

In summary, the concept map focused very much on the people involved in the innovation. The interview was then undertaken to enlarge on some of these ideas.

### *Interview*

The clear message from P1 was that learning should be driven by student interests:

...there's some really great stuff being developed, but instead of that being the starting point, the starting point is where the student is, what they're interested in, what their passions and interests are and then trying to package around that the curriculum that will suit. So when you've got a lot of students interested in one area we will run might be a five week course. Not that we decided it was something that they needed, but it arose out of discussions with individuals or small groups. – (Participant 1, 22/3/04)

In order to cater for students more, learning should be more individualised and in this regard ICTs were seen by P1 as being of great value. The ability of students to have choice in their learning was seen as fundamental in the school.

P1 indicated that it has been a struggle with determining whether students are learning and how controlling the school should be. Feeling comfortable that students will learn when they are ready was a risk, but students who started off by doing little did get sick

of doing nothing. For P1 there was, and continues to be, a tension between expecting students to be on task and whether this really is any indication of their learning:

And the group of students sitting in the corner talking isn't learning. So some of that is my sort of my hang up too. Some of the other learning advisers are much more relaxed about that and can see the journey that the kids are on and are a bit more relaxed about the way that we get there. I, I'm not good on delayed gratification. I want it all like now. – (Participant 1, 22/3/04)

However, P1 was also confident that students were learning skills which they would need for the future: “I just know that our kids that go on from here to university will have such fantastic skills that will prepare them wherever they go, in terms of knowing how to organise themselves, knowing about themselves, knowing about how they learn.”

P1 discussed grappling with the learning environment and the role of the learning advisers in helping students learn:

And you know that's not to say there isn't a place for teacher driven timing and content and delivery and that's probably one of the things that I'm grappling with is where the balance lies and the balance is actually different for each student, which is what makes it incredibly difficult to implement um and within the learning advisers we have a range of feelings about where it should be. And as long as we always focus, as we always end up whenever we're sort of doing our action research reviews, you know what's working, what isn't, what are we trying next, is always going back to what is the best way of delivering this for the students. It always comes back to the diversity of the student and that we have to offer... I mean we can't base it all around integrated curriculum and individual projects. – (Participant 1, 22/3/04)

P1 reinforced the importance of innovative people being necessary to drive innovation. It was working with such people that had been one of the main reasons P1 had chosen to work in the school and he saw the role of teacher as the biggest innovation in the school. P1 saw himself as one of the learning advisers, as shown by the inclusive language (as underlined): “Some of the other learning advisers are much more relaxed about that and can see the journey that the kids are on and are a bit more relaxed about the way that we get there.” Throughout the interview P1 described himself as a learning adviser rather than as a director. This may be because he is focused on the learner, or because he saw the staff in a non-hierarchical way and himself as just part of the team.

Innovation also required that schools be ‘packaged’ in different ways. The role of the teachers was part of the way in which schooling was packaged differently in these

schools. The staff were trying to move away from curriculum silos and placed a greater importance on relationships and connections. The whole structure and timetabling process was one example of how the school had tried to create a holistic learning environment.

Participant 1 believed strongly that schools needed to change in order to meet student needs, making six separate references to the current system not meeting the needs of students. P1 saw traditional schools as, “deciding the curriculum in the best interests of the student, packaging it up and then delivering it to them.” The use of the term ‘delivery’ is an interesting one in that P1 used it to describe what was seen as happening in traditional schools. This term is often used in a managerial way as commonly adopted in market-driven education.

Some of the positives were seen as having a negative side as well. An example of this was the physical environment. P1 saw it as being more open, therefore transparent. It was one of the things that contributed to the lack of bullying. However, it also provided distraction from work.

P1 reiterated that radical innovation meant that the innovation was fundamentally different, from the roots. In the designated school the way learning was packaged was seen as being innovative. ICTs were a motivator in this. There was the need to learn from mistakes and the strength to be prepared to do this was seen as important if radical innovation was to occur.

P1 was most interested in the process of innovation on a human. He saw that ICT was most useful in its ability to provide for individualised learning. For some particular students ICT has been a huge motivator, but for all it has given access to ICTs for online courses, internet and research tools. P1 commented that this would help the sustainability of innovation. In the past some alternative schools that tried to organise themselves based on individual needs had struggled because ICTs were not available at the time. In this respect ICTs have the potential to change the way we learn.

P1 came from a school where ICTs were used extensively and when asked how the new school was any different the comment was made that “the difference is that the students direct the ICT rather than the teacher [directing the ICTs].” Despite having inspired and

inspiring teachers at his last school, teachers did the planning for students' use of ICTs and it was more "limited to within the silos really." In comparison, at the new school ICTs were:

- based on wherever the student interests were;
- across wherever the learning is;
- based on students sourcing information for themselves; and
- supported, rather than driven, by the learning advisors.

While P1 believed that ICT availability was important, the focus on student centred learning was the key, not the ICTs for their own sake.

### **Summary of P1 Interactions**

The following items were consistently mentioned as being important, in the concept mapping exercise and the interview:

- student interests should be the key driver of learning;
- schools need to change in order to meet students needs;
- people are the most important part of innovation. P1 added that the role of the teachers as learning advisers was the most important aspect of this. Relationships were identified as a key requirement; and
- radical innovation is fundamentally different, from the roots.

All aspects mentioned in the concept map were reiterated in the interview.

The following aspects were mentioned by P1 in the interview but had not been specifically identified in the concept map:

- the packaging of learning being different;
- the importance of student choice;
- difficulties presented by the physical environment;
- what constitutes learning and what global outcomes we want to produce; and
- the role of ICT in promoting individualised learning.

These elements all related specifically to the school, whereas the concept map had been more general in approach. None of the areas mentioned in the interview were at odds with information given in the concept mapping exercise, but provided elaboration and extension of ideas. P1 was clearly interested in research to improve learning in the school but also to provide useful information for other educators and researchers.

P1 talked of the struggle to change or clarify his own perception of what constitutes learning. Having come from a traditional school environment, learning in the new environment sometimes felt uncomfortable and he worried about getting the balance of freedom and structure right.

After completing the concept map and interview with P1, one of the resulting questions I wanted to pursue was, “What are the best things about the current system that should be maintained and not “thrown out with the bathwater”?” P1 was asked this question and responded that there was still a place for ‘teacher-directed’ learning and the teacher had an important part to play in mediating the learning.

## **Participant 2**

*“There’s a tremendous sense of recognition of the partnership of this journey together”.*  
– Participant 2 (23/3/04)

### *Concept Map*

Participant 2 (P2) broke the concept map into three key components – the drivers (pink), practices (middle boxes) and examples (bottom), as shown in Figure 10. P2 looked at the drivers of innovation, coming back to selected people connecting at the right time and having the ability to move the shared vision forward. In the case of the schools being studied, this included the Learning Discovery Trust, one Trust member in particular, and the director. The parents, staff and students were seen as critical in ensuring that innovation occurred. The role of the Ministry of Education in allowing this innovation was also noted by P2. These people were not necessarily connected or ordered, hence no arrows have been placed connecting many of the ideas. Some examples of things seen as being radical were written outside the boxes on the left and these contributed to a connecting group of practices and examples. Purple boxes show two ideas that the participant believed were examples of the school being very different from others. Will, experience and practice, as shown in green, indicated the participant’s belief that these were fundamental, with the will and experience of the people contributing strongly to the shape of the practice. Time to process stands alone (to the right) as a reminder that change cannot progress at high speed all the time – it is hard, and time to reflect is important.

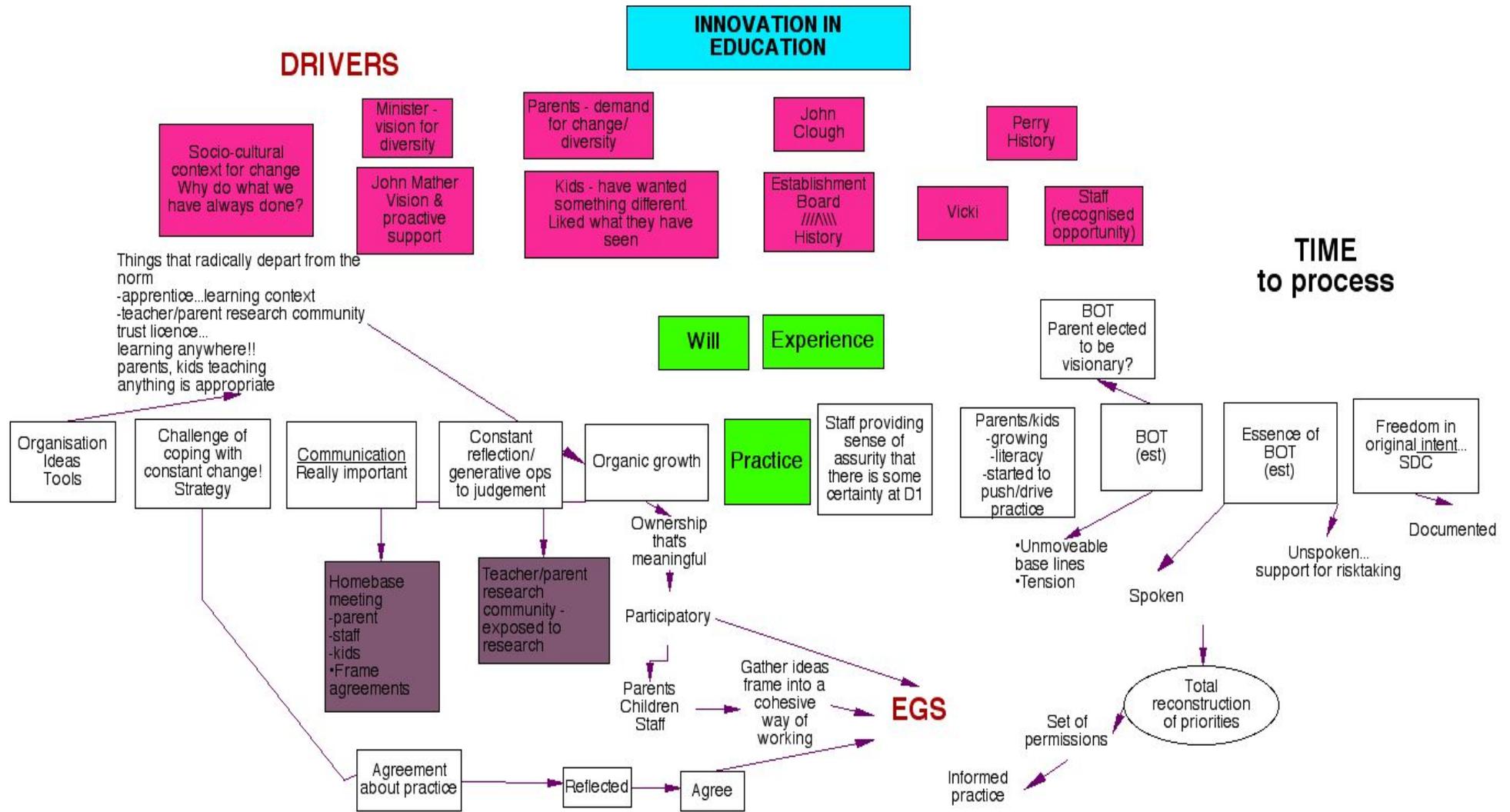


Figure 10: What is Innovation in Education? - Participant 2

The people and their relationships were seen as critical in moving innovation forward in schools. The ability of the director to build a team and develop a culture of dialogue, constant reflection, communication and ownership was considered vital in order for innovation to occur. Staff were seen as being still very central to the process, but more, “as drivers, glue in the community, provide sense of shared practice and implementation. ...In some ways the staff have become more central, important not as people to defer to but in providing a sense of certainty.”

In terms of being radical, P2 saw the shape of learning as the thing that was most innovative. This included the opportunity for learning to happen anywhere (especially with ICTs as a powerful communication tool); that it was student centred, and students were learning alongside, and with, adults. This was not just about curriculum but also about things the students wanted to learn.

The designation as a ‘designated character’ school was seen as fundamental in driving innovation. This was powerful in giving people permission to innovate, create and risk take in a supportive environment, with the board actively seeking new ideas. This could be a challenge to work with at times and an unmoveable baseline could create tensions. This made it especially important that there be clarity around the special character so that all knew what it meant when they opted in.

The practices given in the concept map also reflected that the pace of change needed to be managed so there was time to process things and the ability to grow organically. As innovation developed there needed to be organisation put into place to support the innovation. This placed importance on a strong research community and homebase<sup>5</sup> meetings that were used to frame agreements and then time given to put these into practice and to consolidate learning. There were some tensions between risk taking and the accountabilities required of schools. These needed to be managed carefully, especially in terms of risk management.

### *Interview*

During the interview P2 discussed his interpretation of radical innovation in more depth. He saw it as approaching such things as curriculum, resourcing, staffing and

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<sup>5</sup> Meetings where the student, parent(s) and learning advisor meet to set goals for the next period of learning.

delivery of core basics in significantly different ways – ways that challenge the status quo. References were made to students learning things well above levels outlined in the curriculum, having students learning outside the four walls of the school, learning at home, the different role of teachers and the input of parents. Many of these aspects related to the different organisation of learning.

P2 continued to stress the importance of people and relationships in driving innovation. During the interview he talked about the role of the director, learning advisers, Board of Trustees, Establishment Board, parents and students. The role of the learning advisers was developed further in the interview. While parents and community were used widely P2 still believed that in order for learning to be richer the learning advisers needed to play an important role. P2 considers their role to be even more powerful than in a conventional school. However, while the staff had tried out new ideas these hadn't always been innovative. In some cases they had thought things were innovative at the time, but on reflection realised that they weren't. The following quote is particularly telling:

I think what I'm learning about radical innovation is that it you almost can't divorce it from the person. Like it kind of almost lives within the history of the person, the experiences, the life experiences of the person and you can, you can talk about and you can educate and you can set up parameters for the change and unless there's a kind of a recognition of the worth of that and a willingness to take your practice there it just doesn't pay, it doesn't work and I think that that there's a lot of safety around what people are doing and a lot of doing what you know um and to develop the capacity to really risk is um kind of not present in many of us, I believe, and um that's a major challenge because like it or not staff are really important drivers in this community and they've got to be leading us in quite powerful ways. – Participant 2 (23/3/04)

P2 reflected on the thinking of the school and that some of the things that they thought were innovative in the beginning they now realise weren't, that they were sometimes too timid in making change. This placed importance on understanding self and others and the interactions between people. The histories of the people provided a uniqueness when they connected, but this could hamper innovation as much as help it.

Within this, P2 sees himself as an innovator, which he describes as being rebellious and “they're not prepared to go with the status quo if the status quo isn't working and why would you? And so I think that there's a kind of an inherent disrespect for things in people that want to innovate, you know, they're prepared to be disrespectful of things that we sort of hold dear and have for a long time.”

During the interview, P2 elaborated considerably on the role of parents within the school (10 codings). He saw the role of parents as being something that made this school different: “Because there's a tremendous sense of recognition of the partnership of this journey together. So that the willingness for the community, parent community, to be able to be supportive of this innovation is massive. And we wouldn't be this far along if we didn't have that.” While parents opting to come to the school wanted something different for their children, there was still great diversity in what they wanted.

One of the challenges for the director was the whole business of interpreting the special character. While “the real power here lies with those original intentions and the original permissions that the governors have given the school” this created tension between intent and practice. Also as the original founders of the school moved off the board the parent elected board have not had the same clarity in terms of the special character.

During the interview, P2 reiterated the need to develop systems that would help sustain the change. “Organisation needs to be there in order for us to be able to cope with change otherwise becomes too chaotic and we can't cope.” He went on to explain that the school did place extra stresses on staff. Part of this was related to the whole issue of resourcing this model of learning, where: “You've got one teacher for 25 kids and you've potentially got 25 inquiries and clearly, you know, how do you do it? You know, I've been quite deeply concerned about that.”

The ability to make mistakes was reaffirmed (7 codings). P2 gave examples of ideas that had been tried but hadn't worked. It was important to learn from these, and not be afraid of taking further risks.

One of the issues that was briefly touched on in the concept map was the need to have some agreement about practice. P2 talked about this from several angles. Within the staff there were varied viewpoints, especially as the school had recently employed more staff. There were also varied opinions from parents. The school was grappling with the notion of what constitutes learning and what the balance should be between direction and freedom. As a result, P2 wanted there to be, “the development of a consistency of practice document that deals with the question of readiness. When is a child ready for

learning? Is it ever appropriate for them to not be involved in the ongoing learning skills in key areas? These sorts of notions are important for us to actually dialogue about and get some shape around.” There is a real dilemma about how much to direct learning or how many foundational skills need to be directly taught:

I worry very much that within the context of liberal progressive communities that that we're really scared to bring things to kids and ask kids to be involved in key learning because we fear disenfranchising kids and somehow taking away their power and I don't accept that's true. I think that it's vital that we play a role as professional educators in the community to bring expectation that um sensible progress is made in key areas of learning and that clearly if it's offending the kid or if its upsetting them or if they're not ready we've got to have a different plan, but that the vast majority of kids love learning to read and they love learning to write and they get a real kick out of it and it's a really healthy thing and it's an important skill for them that they learn these things. – (Participant 2, 23/3/04)

P2 focused mostly on ICTs as important for communication, especially the telephony systems, email and intranet. These allowed students to stay in touch with the school no matter where they were learning. This was used for safety and accountability as well as reinforcing the idea that learning happens everywhere and is an interactive process.

P2 did not see the use of ICTs in the school as being more innovative than many schools around the country. Students with a particular passion for ICT have the opportunity to work with staff who share the same passion, but that was not radical. The focus was very much on “what your passion, your interest is, your strength is” as the driver, rather than the ICTs. P2 commented that those students who do have a particular interest are quick learners and need little tuition. He cites the example of a student who had difficulty with reading and writing but who had been able to manipulate and integrate a number of ICT packages in quite unique ways and hence experience success.

### **Summary of P2 Interactions**

There were no elements mentioned in the interview that had not been mentioned, albeit fleetingly, in the concept mapping exercise. The interview confirmed ideas and provided in-depth examples of how the school was trying to innovate, and identified some barriers and drivers to innovation.

The following items were consistently mentioned as being important, in the concept mapping exercise and the interview:

- the role of people and the relationships, interactions, histories being vital in determining levels of innovation; and
- the packaging of learning and what constitutes learning.

The following aspects were mentioned by P2 in the interview but had not been specifically identified in the concept map:

- professional development initiatives;
- how success is measured (a question relating to this was asked during the interview); and
- the role of ICTs (this question was asked as part of the interview).

In summary, P2 focuses on the cultural aspects of innovation and expresses some concern about how the school philosophy is interpreted. He grapples with the notion of what constitutes learning and is hoping to make this more cohesive across the community.

### **Participant 3**

*“It’s still basically a team thing...” – Participant 3 (24/3/04)*

#### *Concept Map*

Participant 3 (P3) divided the concept into a definition, features of innovation, and implementation of innovation, as shown in Figure 11. Green headings at the top of each column represent the common thread for the whole column. The items are not in order of importance and no linkages between items were shown – this map is more a collection of ideas without relationships shown. The green box at the bottom was the participant’s way of showing the importance of a cyclical approach where new ideas were tried and reviewed. Innovation was seen as change that was dramatic, but that it still built on the work of others and that everything was up for debate. When innovation occurred, P3 believed it was important that it was embedded in the school culture. This was a focus point if innovation was to be real and to be sustained. A culture of innovation had to exist in practice, not just in perception.

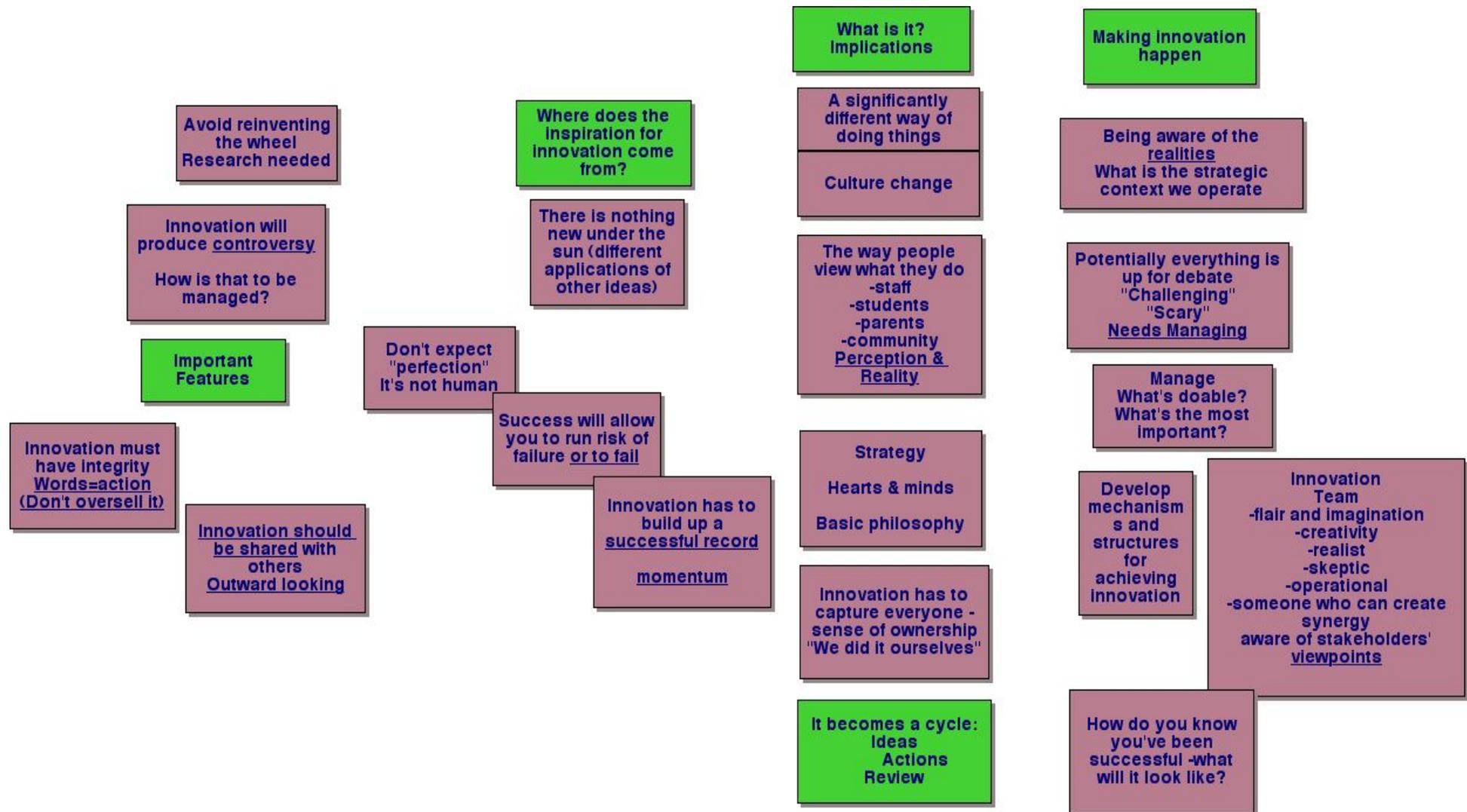


Figure 11: What is Innovation in Education? - Participant 3

In developing a culture of innovation there was a need to have innovative people, who were creative, imaginative thinkers. However, there also needed to be realists to implement the change. This placed importance on relationships, since the establishment of a strong team was needed to drive things. P3 saw innovation as needing to have ownership from those taking part, not just seen by the managers to be wonderful – staff and students needed to buy in too.

As part of the implementation, and to sustain the changes, there was a need to have good structures and systems in place. The green box at the bottom of the concept map highlights this for P3. Innovation needs to be manageable and have some sort of structure to be embedded and ongoing.

When looking at the issue of how will we know whether it has been successful, P3 commented on the organic nature of change, and there always being things to work on. There was still parental pressure to take part in exams and it was important to have these as part of the equation so that it kept doors open for future study. He believed that more thought needed to be given to developing a clear understanding of what successful learning will look like, otherwise we can't measure success.

### *Interview*

P3 saw coping with the change as an important feature, with five mentions. Innovation is not easy and it relies on people working together and there will be dips along the way.

I think rather than trying to reinvent everything you've got to accept that routine and habit sustain us. We just can't cope with reinventing everything. We actually have to say let's take some things as given and we can work around those and deciding what those are and what's reasonable and what's not I think are part of it. – (Participant 3, 24/3/04)

One of the things P3 mentioned as being important was the fact that people have the best will in the world but it's hard to change and we see the world through our own lens:

... there's an inertia that pulls it back to evolution rather than revolution, and while we might like to think there's a wonderful new beginning out there and we can do our best to create that new beginning, we're probably going to be doing to some degree disappointment because we are what we are right. Because part of it is actually saying well we could be wonderfully new people as well um, whereas in fact we can't. – (Participant 3, 24/3/04)

In order for innovation to occur people also needed to change the way they think about what they do. He highlighted the problem of staff, students, parents and community having a gap in

their thinking between perception and reality. Quite often, people could think they were doing something quite different when they were not. Other times they may not have been aware that what they were doing was quite different.

P3 had already been through establishing a new school before and from that experience had come to believe that there “is no such thing as a new start, as a fresh start. That everyone brings their prejudices and beliefs and value systems with them and you end up just recreating something that reflects their experience if you’re not careful.”

P3 had a strong sense of the role of developing a school culture (7 mentions) and a team, using the strengths of people to make the change happen:

Innovation has to have a team with the following elements - flair, imagination, creativity, realists (yes but...), operational (this is how it might work). Might be same or different people. Have to have synergy so all can work together. Team that drives the things that you are doing. Vision etc important but have a project team to drive innovation, not necessarily whole team. – (Participant 3, 24/3/04)

In developing school culture it was important to develop a team and a sense of shared leadership. It was important to bring all the bits together and he felt that that synergy had yet to be achieved. For real change to occur P3 suggested that the people had to believe they did it themselves and have some sense of ownership. It had to come from the staff and students, “not just what management says is wonderful”. P3 also stressed the importance of systems to support change and create new opportunities.

At times P3 struggled with the wish to be innovative and the strong pull back to a traditional model; from students sharing power to being told what to do:

And also the fact that you can see it's very easy for all of us to fall back on the things that we've done to cope with issues that are traditional in our workplace, you know, I found myself time and time again wanting to get back to saying well they'll just do it. We'll ah, this is what will happen right? We'll, we'll make them work. If they don't want to work we will make them work, and it's not that business of really being democratic and empowering about it. – (Participant 3, 24/3/04)

P3 brought his own background in dealing with teenagers, talking about some things just being part of being a teenager “one of the things that I was reminded of was the universals that ... that teenagers are still teenagers, that they do teenage things. Even the ones who say they're motivated to learn at times, they're not motivated to be.” He was somewhat disappointed that the students “haven’t picked up on the pearls that have been cast for them to

quite the same extent that I thought they might.” This relates back to the dilemma of who will drive the learning and how it will happen.

P3 provided a note of caution when thinking about innovation. He stated that “ we have to be careful of as we innovate is that we aren’t ‘doomed to succeed.’” He suggested that sometimes we get caught up in the latest fad, or start an innovation without thinking clearly enough about the consequences: “So innovations are doomed to succeed and if we're not careful, you know, we all sort of get sucked in by the bandwagon. I can think of certain new things that have happened to secondary education and everyone has followed without really thinking them through.” For him, this reinforced the importance of not being afraid to fail as that was an important part of making change. We should never be afraid to fail or to say that something didn’t work because otherwise we won’t grow. There was a need to try things out since, “there are fewer good ideas than there are failures but you have to go down that track to do it.”

P3 saw ICTs as having the power to cater more for individualised learning, but did not believe that traditional secondary schools were using them that way. The access to ICTs at the new school allowed students to tap into a wider range of educational possibilities than other schools.

P3 also commented on the need to establish relationships with other ICT providers so students can be extended. New areas such as animation have the potential to change the way we learn and lead to whole new career opportunities. The roles of ICT to communicate and to learn offsite were seen as the most beneficial uses of ICT. Meeting the learning needs of students was mentioned as being the most important thing to keep in mind when deciding whether a new ICT would be introduced.

### **Summary of P3 Interactions**

The following items were consistently mentioned in terms of being important, in the concept mapping exercise and the interview:

- the importance of school culture;
- developing a team comprised of those who can create a vision and those who can make it happen; and
- the ability to cope with change and the realities of this.

All aspects mentioned in the concept mapping exercise were also mentioned in the interviews.

The following aspects were mentioned by P3 in the interview but had not been mentioned in the concept mapping exercise:

- the importance of leadership by all; and
- the role of qualifications in learning.

For P3 in particular it was important to show other schools that you do not have to have ‘flash gear’ to be innovative or successful. He made no mention of student choice and little reference to packaging learning. The roles of teachers and parents were not mentioned as much by P3 as by other participants. He focused much more on the staff and the importance of developing culture. This may have been because he was involved in the school in its establishment phase, when staff were being employed and the development of good working relationships was paramount.

#### **Participant 4**

*“The first answer here is not no, it's yes and how can we make it happen?” – Participant 4 (3/5/04)*

#### *Concept Map*

Participant 4 (P4) divided innovation into environmental (orange), learning (light green) and relationships (blue), as shown in Figure 12 on the following page. The darker green circles are used to show these three first level ideas. P4 saw these three as being part of a pie, which created a circle, and where all the parts were inter-related. While innovation was seen as happening in many schools, the packaging of ideas together was what was seen as making a ‘designated character’ school significantly different. Arrows show the ideas flowing from each of these main headings. To the right, arrows from technology indicate another level of concept, with arrows identifying key ideas that spring from the use of ICTs.



The major theme discussed by P4 was learning. P4 made it clear that ‘teaching and learning’ was a hierarchical notion and not what was featured in his map. The main focus under learning, was around the notion of meeting the individual needs of students through flexible timetabling, supporting individual interests and creating programmes that arose from student needs or requests. Where this occurred, students were more likely to be happy and motivated to learn. The importance of feeling valued was also developed in the theme of relationships.

A subset of the learning theme was the role of ICTs in learning. The degree of access to ICTs and the support of them were seen as being important in driving the learning in a way that was transparent and met the needs of students wherever they were. The school had provided students with the opportunity to lease laptops and this had increased accessibility, while still providing resources for students who did not have their own equipment. For those with special passions in this area the ability to provide some high end equipment, and to forge relationships with ICT experts and organisations in the community was a major driver.

Frequent description during the creation of the concept mapping exercise focused on the importance of **relationships**, especially trust and communication. Flexibility was mentioned as being important in several key ways:

- the ability to make curriculum fit the needs of students;
- the need to make buildings and spaces multipurpose, rather than boxed;
- the necessity of staff to think outside their curriculum strengths; and
- using ICTs to support the learning at any time in a seamless manner.

**Choice** was mentioned as being vital in this environment. This meant providing the opportunities and possibilities for students (and staff) about what they would do when, and with whom. For this to occur there had to be a high degree of trust in the students. The role of the ‘teacher’ in this process was mentioned regularly. The role was not one of simply imparting knowledge. There needed to be a range of specialist and generalists, of experts and facilitators and these may or may not be the same person. Diversity was appropriate and this included extending to other schools for partnerships. However, the staff should not be driven by the curriculum, but by student needs. While people did not need to relate to everybody in the community there was a strong sense that good relationships were necessary.

These relationships were also crucial in determining the role of parents within the school. P4 believed that parents had a genuine role and contribution to make and that partnership with

them was implicitly developed through such things as their involvement in students' individual learning plans, parent liaison for each homebase, frequency and attendance of parent meetings and control of the parent meetings in the hands of parents. P4 could see honesty in conversations and a lack of arrogance from staff regarding the role of the parents. Again, trust was a major feature in developing these relationships.

The third major theme developed by P4 was that of **environment**. A number of indicators shown on the concept map and comments during the map making indicate that, while it is still the third piece of the pie and therefore seen as necessary, it does not have the same importance as learning and relationships. Features identified under the heading of environment included the need to create a physical environment that was, where possible, more like a home and that it should be a community resource. Many spaces should be flexible in their use but there should also be the opportunity for areas to be set up to motivate or capture interest.

#### *Interview*

Participant 4 talked about radical innovation as being about the way things are packaged differently at the school. He reflected on his experiences as principal in his last school and some of the innovative things undertaken there. While they tried some innovative ideas, these were limited by the nature of the school community. Innovative ideas were developed in small pockets because, "I doubt that the community would have been ready to look at that across the whole school."

P4 has a real focus on learning, as indicated in his statement, "we're going to take learning first and then we'll match it to the curriculum second rather than the opposite being true." He focused particularly on the need to have student needs and passions at the forefront of learning in the school. The packaging of learning was based around this idea, with student choice being an important component of the package. P4 has been pleased with the way students have developed independence and been able to select from a range of options:

...our hunch that kids can make good choices is absolutely right. That it isn't a hunch, it's a reality. That they've got really good ideas, they're really powerful thinkers, they have a great ability to make really good choices about their learning and that, that's just so reassuring. – (Participant 4, 3/5/04)

The ability to be independent is fostered through the adults in the community trying to share power with students. As P4 commented, “I think that we really try hard not to make decisions which effect kids without having their input.”

The flat staffing structures also encouraged power to be shared amongst all staff. At the same time he saw that there were times that innovation had to be driven by the directors. It was easy for people to fall back into known routine and this was especially so when there were still some conservative elements in the school. He did not see the staff as real innovators generally.

P4 talked about the structures that had been put into place to support the learning. These included:

- glide time;
- flexible timetabling;
- the nature of the facilities and buildings; and
- staffing roles.

The focus of these structures was to provide more options for the way learning looked, in order to better cater for student learning styles, needs and passions. At the same time there was to be some certainty to the learning process for students, staff, and parents. It was this structure that gave a fundamentally different look to the whole way learning was organised in the school. P4 gave an example of how staff had tried to reduce the structural requirements for curriculum. By the end of the term,

...the general feeling from students was they missed the structure. They liked the prompts that came from having a programme and the staff felt as though there wasn't evidence of powerful learning, um and they felt many of the students were off task rather than on task. I think the parents liked the comfort of seeing some familiar terms like science and maths on the programme, more than what was on offer and that sort of comfort zone of being able to have a sense that um the learning was still um tied to the curriculum in a way that they could understand. All in all it was pretty dismal. The thinking behind it was good. – (Participant 4, 3/5/04)

P4 saw partnerships as vital in making the school successful. This was seen from several viewpoints:

- linking with other educational institutions – schools, polytech and ICT training providers;
- bringing in external tutors to work with students; and
- linking with businesses.

P4 was the only participant to specifically identify the role of ICTs in his concept map. During the interview he expanded on this considerably, especially in the area of ICT availability. The mobility of the technology was important and while this had initially caused a number of problems with equipment being lost or broken, the school now had better systems to cope with this. Some students had bought or leased their own computers because they saw them as being really important. ICTs were used to facilitate individualised learning, allowing students access to a lot more specialist support. This was geared very much to, "...not just the technical skills but the actual creative skills and the creative thinking and it's done in the context of the kids' own learning projects."

### **Summary of P4 Interactions**

The following items were consistently mentioned as being important, both in the concept mapping exercise and the interview:

- learning focused on meeting the diverse needs of students;
- the importance of choice in meeting these needs;
- relationships as being vital in establishing school culture;
- having the structures in place to support innovation; and
- the role of entrepreneurship in the school. P4 was the only participant to mention this as being important.

All items shown in the concept map were also mentioned in the interview. Although items were expanded on considerably during the interview there were no new areas introduced. This would seem to indicate that P4 has a clear understanding of what the school is about. His experience in innovating in the tradition school setting may have allowed him time to develop this clarity.

## Summary

The four participants represent different cases in themselves. When the four are combined we can see the differences and similarities in more detail. Participants' concept maps and interviews were coded, resulting in 59 initial codes, as shown in Table 11. Note that radical innovation was mentioned 27 times, but this was a prompted question. A detailed list of all codes and the definition allotted to each code can be found in Appendix 3.

However, there are differences between the participants, and these need to be mentioned. Table 10 shows not only the totals of each code, but also the number of times each participant made a comment that was allotted that particular code. This shows how differently participants interacted with the questions. For example, participants 1 and 4 made references to the code *Driven by student interests or needs* on many more occasions than the other two participants. In Table 10 the codes are listed in order of total times mentioned. The colours indicate the codes that I thought belonged together, and which were subsequently combined to create a smaller number of codes as follows:

- orange – student interests and needs;
- grey – definition of radical innovation;
- blue- communication;
- green – roles;
- yellow – what constitutes learning;
- pink – background information; and
- purple – systems to support and sustain.

**Table 10: Comparison of Codes by Participant**

Initial Codes	P1	P2	P3	P4	TOTAL
Driven by student interests or needs	10	6	4	12	32
Packaging of learning	8	7	2	10	27
Radical Innovation	5	8	10	4	27
Learning from mistakes	6	7	5	5	23
Role of the teacher	5	7	2	9	23
Role of parents	1	10	3	8	22
Choice	6	3	0	12	21
Relationships	6	4	5	6	21
What constitutes learning	5	6	3	6	20
Current system not meeting needs	6	3	6	4	19
Innovative people	3	9	3	3	18

Systems to support and sustain	1	2	6	7	<b>16</b>
ICT for individualised learning	6	1	4	3	<b>14</b>
Power sharing	3	5	2	4	<b>14</b>
School Culture	1	1	7	5	<b>14</b>
Philosophy	6	3	2	2	<b>13</b>
ICT availability	2	2	3	5	<b>12</b>
Timetabling	4	2	2	4	<b>12</b>
Interest in research	6	2	2	1	<b>11</b>
External influence	0	4	4	2	<b>10</b>
ICT as a motivator	4	2	3	1	<b>10</b>
Motivation to learn	0	2	4	4	<b>10</b>
Partnerships	0	0	2	8	<b>10</b>
Student readiness	2	1	4	3	<b>10</b>
ICT changing the way we learn	4	1	2	2	<b>9</b>
Outcomes	6	1	1	1	<b>9</b>
Physical environment	3	0	1	5	<b>9</b>
Coping with change	0	1	5	2	<b>8</b>
Directors role	0	3	2	3	<b>8</b>
ICT for communication	0	3	2	3	<b>8</b>
Perception v reality	2	1	4	1	<b>8</b>
Resourcing	1	2	1	4	<b>8</b>
Stress and workload	0	2	0	6	<b>8</b>
Team	0	0	7	1	<b>8</b>
Leadership	0	1	6	0	<b>7</b>
Measuring success	1	3	2	1	<b>7</b>
Qualifications	2	0	1	4	<b>7</b>
Special character	2	3	1	1	<b>7</b>
Specialist v generalist	2	0	1	4	<b>7</b>
Barriers to change	1	0	2	3	<b>6</b>
Learning Discovery Trust	1	2	1	2	<b>6</b>
Ownership	1	2	2	1	<b>6</b>
Role of NCEA	2	0	2	2	<b>6</b>
Size of school	1	0	2	3	<b>6</b>
Students are happy	1	1	1	3	<b>6</b>
Why became involved	3	1	1	1	<b>6</b>
Communication	0	2	1	2	<b>5</b>
Entrepreneurship	1	0	0	4	<b>5</b>
Preparatory phase	2	1	1	1	<b>5</b>
Sharing success with others	0	0	3	2	<b>5</b>
Why students come to the schools	1	1	1	2	<b>5</b>
Board of Trustees	1	3	0	0	<b>4</b>
Organic growth	0	1	0	3	<b>4</b>

Primary v secondary	0	0	2	2	4
Future	2	0	1	0	3
Keep good things from past	0	0	1	1	2
Professional development of staff	0	1	0	1	2
Universals	0	0	2	0	2

The top ten codes show that the focus of the school on meeting student needs is an important one and this is developed by packaging the learning in new ways and providing more choice. There are also two codes in the top ten that indicate the importance of the roles of people in enabling innovation to occur. All participants consistently noted the importance of establishing positive relationships and learning from mistakes in a supportive environment.

All participants mentioned the importance of research. In particular, from their responses, it seemed that there were perceptions that research could assist:

- so we don't reinvent if good things already exist;
- so that we can grow and reflect; and
- so that others can learn too.

The idea of sharing with others was mentioned by all four participants as being important for innovation to keep growing inside the organisation and for innovation to be adopted by others.

Some of the initial observations regarding the different responses between participants are as follows:

- the packaging of learning was mentioned by all participants, although not so much by P3. This may have been because he was not so involved with the development of the curriculum for the new school;
- stress and workload were mentioned by the two fulltime directors rather than the part time directors;
- the importance of systems to support and sustain, while mentioned by all directors, was more of a focus for the directors of the newer of the two schools. This may be because the school is still in its early development;
- choice was mentioned mostly by those involved in the secondary school, especially those who had continued in their role as director beyond the first year. They saw choice as being less common in traditional secondary schools, but believed this was a necessary component of meeting student interests and needs;

- there was consistency regarding the influence of ICTs, focusing on their influence on learning, rather than in having a stand alone importance;
- P4 was the only participant who mentioned the role of partnerships in supporting innovation;
- qualification and the role of NCEA were not a focus of the schools, although P3 did believe that parents still wanted to know that their children would be able to pass exams; and
- the two full time directors, in particular, commented on the important role of parents in these schools and that this is quite different from other schools.

Chapter Four has provided an insight into the thoughts of the four directors in terms of innovation in education. Each of the directors has a unique perspective depending on such factors as their own histories, the interactions within the school and the particular role they fulfil in the organisation. Nevertheless, common themes are also starting to emerge from the data. Chapter Five explores these emerging themes by combining some of the codes and establishing several theoretical propositions.

# CHAPTER FIVE

## THEORETICAL PROPOSITIONS

### Introduction

The previous Chapter outlined the main findings from each of the four participants, then summarised the overall coding of the comments. This Chapter is divided into three parts.

Firstly, an initial definition of radical innovation in education is created and key ideas from the collected views of the participants are synthesised. Secondly, the emergence of five theoretical propositions is outlined, then each proposition is discussed in detail. Summaries of coding are presented and quotations from participants are used to provide rich description of key ideas. Examples from school documents provide further information about the points developed. Finally, the propositions are developed further following a focus group discussion with participants. The emerging propositions were presented to the participants and the resulting feedback led to final comments relating to the propositions. This includes participants' thoughts about the drivers and barriers to innovation.

### Participants' Views of Radical Innovation

In summarising participants' views of radical innovation, I used conceptual mapping to organise my information and look for relationships (Artinian, 1986). Common ideas were grouped together, levels developed and relationships established using *Inspiration*. I found this a more useful tool than using the HyperRESEARCH Code Map as it allowed for notes to be kept, colour to be added and changes to be made quickly as thinking developed.

In making sense of the data, the conversations that were coded for radical innovation were grouped according to three concepts – a) emerging definition of innovation in education, b) examples of radical innovation in the schools studied, and c) characteristics needed to innovate. In the following sections, these three concepts are discussed and visually presented. Figure 13 shows the results of this summary. In Figure 13, the green areas refer to emerging definitions of radical innovation, the blue areas refer to examples of radical innovation, and the mauve areas refer to characteristics needed to innovate. Relationships are defined by the arrows. Some of the barriers to innovation have been listed to the left.

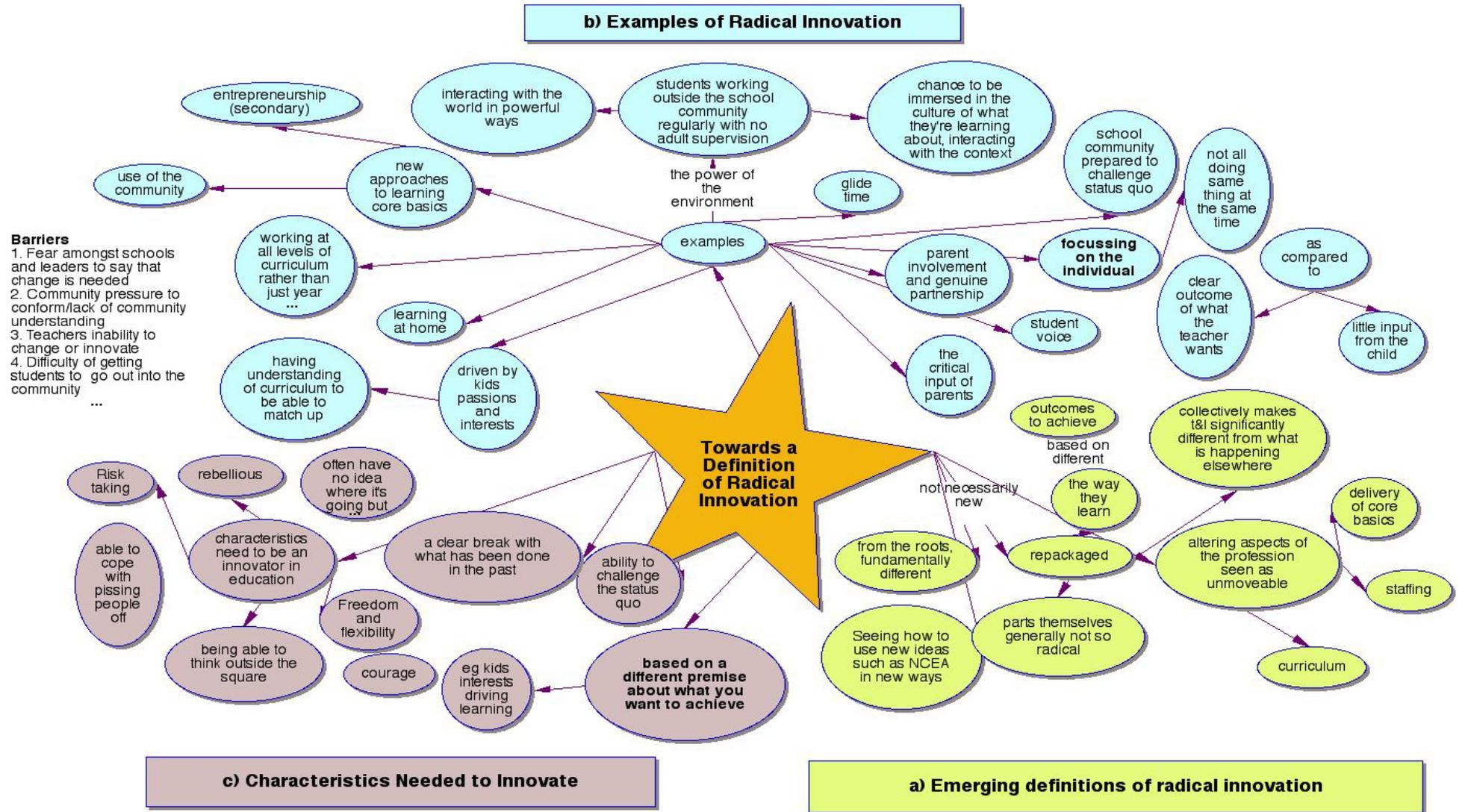


Figure 13: Summary of Radical Innovation Points

The emerging definitions of innovation and the characteristics of innovation have a number of aspects in common, rather than being totally separate. For example, the characteristic ‘based on a different premise about what you want to achieve’ (mauve, bolded) represents the different thinking an innovator needs in order to innovate. An innovator would be identified as venturesome, as previously discussed in the literature review (Rogers, 1995). However, this notion also is apparent in the emerging definitions of radical innovation, where innovative ideas are considered to be fundamentally different from the very roots. The examples of radical innovation support the emerging definitions and characteristics. Collectively, these examples support the innovative environment and many provide detail focusing on the individual learner, hence the reason for this bubble to be shown in bold. Each of the three parts of Figure 13 is outlined in more detail in the following section.

### **a) Emerging Definition of Innovation in Education**

The green areas in Figure 13 represent the emerging definition of radical innovation in education. The key ideas about radical innovation in education are summarised as follows in terms of it being foundationally different, repackaging, and professional change:

#### *Foundationally different*

Radical innovation is fundamentally different in foundations or premise, not just ‘tinkering around the edges’. The participants described it as outside the ordinary, outside the mainstream or “a significantly different way of doing things. That distinguishes it from other things that can be seen as innovative but are just tampering with the status quo” (Participant 2, 23/3/04).

In Chapter Two of this dissertation, Schlechty was quoted as believing that radical changes are “so far out of the prevailing tradition that they cannot be supported by the existing structure and culture” (p. 42). This notion is well supported by the comments of the participants.

#### *Repackaging*

The packaging of learning at these schools was seen as being different from that in other schools. It was acknowledged that it can be derived from what has happened in the past rather than having to start everything from the beginning. However, where innovative schools might generally have one or two parts of the same package, it was the way the components were put together at the two schools that was different.

In observing these two schools in operation, aspects of learning that can be found in other schools are apparent. For example, in a follow-up observation in the secondary school setting, I sat in on a class completing photo narratives. Such a lesson could have been observed in many traditional secondary schools. When questioned, the director agreed that you could see that lesson elsewhere, where a good teacher was taking a class. The difference was that the students had opted into the class because it met their individual needs. As there was no compulsion to take that class, students were motivated and focused. The programme had been designed with student input and was assessed in different ways to the conventional classroom. This was part of an approach to repackaging the whole curriculum.

### *Professional Change*

Radical innovation was described as “massive departures from the norm, things that people do that you don’t expect to see” (*Participant 2, 23/3/04*). The emphasis on driving people to think differently through a different underlying premise rather than tinkering with constant change was considered important. In terms of the literature this description fits with the model of second order change (Clarke & Christie, 1997). Sergiovanni (2000) describes this reculturing as “both complex and difficult” (p.147), because it requires massive changes in individual and collective held meanings about schooling (by teachers, students, parents and the wider community). The difficulty in making such changes is illustrated through Sergiovanni’s statement that:

Changing a culture requires that people, both individually and collectively, move from something familiar and important into empty space. And then, once they are in this empty space, they are obliged to build a new set of meanings and norms and a new cultural order to fill up the space. Deep change, in other words, requires the reconstructing of existing individual and collective mindscapes of practice: (Sergiovanni, 2000: 148).

Professional change implies that people, especially staff, will have an openness to second order change, and that the school organisation and leadership support this. Unless both elements are present radical innovation has no chance of succeeding.

### **b) What Counts as Radical Innovation**

Examples given of radical innovation are shown in blue in Figure 13. These may be used in other schools to some degree, but as discussed previously, it is the consistency in which they were used in the schools studied and the collective nature of the examples that make these

more radical. The emphasis on the packaging of learning being the most radical idea is supported through these examples.

Those directors who were from secondary schools commented on the fact that the current system employed elsewhere in schools was not meeting the needs of students, although some good changes had been made within the traditional systems of education. As P3 comments, “the current secondary system is archaic, is medieval and no one is addressing that in a meaningful way, except we're trying to ask those questions in our own inadequate way. I think that's the most innovative thing we're doing.” The problem was seen as being worsened by the fact that in primary schools they were focusing more on the use of ICTs and secondary schools were not yet keeping up. The technology is either not there or is being used inadequately. The pull back to traditional methods was always a tension, “that's the most damning things we've said in our conversations last year, this is sounding like an ordinary school” (Participant 3, 24/3/04).

One specific example of radical innovation in the schools was the structured support for, and encouragement of, students learning at home or out in the community. This was often without adult supervision, especially for senior primary and secondary school students. The ability to interact with the world in powerful ways was seen as being more than just providing authentic contexts, but also providing the chance to be immersed in the culture of what they are learning about, *interacting* with that context. This ties in with the idea of connectedness adopted in the Productive Pedagogies of the Queensland New Basics (Education Queensland, 2003). Other aspects of radical innovation included the student-centred nature of learning, and the role of parents in the learning experiences. These are covered in some depth on the following pages.

### **c) Characteristics Needed to Innovate**

One of the other groups of codes focused on the characteristics needed to be innovative. In Figure 13, items coloured in mauve represent these characteristics.

Participants mentioned the need to be a little rebellious and to be able to take risks. This is a mindset that allows people to be comfortable with the unknown, even if they are not sure that the idea will fit the rules or be successful. Courage is needed to do this. It was recognised that sometimes others felt uncomfortable or annoyed but people needed to cope with this and be prepared to challenge the status quo.

Creativity and the ability to ‘think outside the square’ were also mentioned by all participants. For these to occur the schools needed to provide the opportunity for people to have freedom to try their ideas and flexibility in how they went about innovating. This relates to school culture, which is discussed later in this Chapter.

From the experiences of the participants, they struggle with developing innovative practice. Their thoughts were constantly changing as they tried new ideas. Sometimes what seemed innovative at one stage did not at another. For example, one of the participants indicated that: “There's still a lot of stuff out here that we're just working through and doing some of it is quite conventional. We're just kind of understanding that it's conventional because we thought it was innovative...” (P2, 23/3/04). While they are starting to have a better picture of the large concepts of innovation their perceptions of innovation change constantly as they interact with their environments and the people in them. These understandings continued to change throughout the research. As an example, several months after the concept mapping exercise had been completed one of the participants indicated that he had moved on from his thinking and if repeating the exercise he would construct the map in a substantially different way. This, in itself, demonstrates the characteristics needed to innovate.

### **Emergence of Theoretical Propositions**

As the coding was completed and relationships were explored, a number of findings emerged. These have been labelled theoretical propositions in that they describe the relationships both within and between categories (Chenitz & Swanson, 1986). Once codings had been completed the thirty two codes were collapsed as these relationships were developed. Five main propositions came from this work, as shown in Figure 14. These proposition headings, coloured red, are: roles, driven by student interests/needs of students, school culture, what constitutes learning and systems to support and sustain. The four layers of concept mapping are from red to orange to green to aqua. As the map progressed to the aqua levels, ideas became more specific, providing examples of the bigger concepts. Bright blue represents ideas that were not mentioned in any detail, but which I thought were important to follow up on in the focus group discussion. At the top of the diagram are the ideas that were coded into create a better understanding of radical innovation. These could be barriers or drivers to change. The size of shape of the individual items are not significant.

Figure 14 represents my own thinking about the data gathered and is broken up into four levels with interactions between various parts of the diagram. This helped me develop each theoretical proposition in more detail.

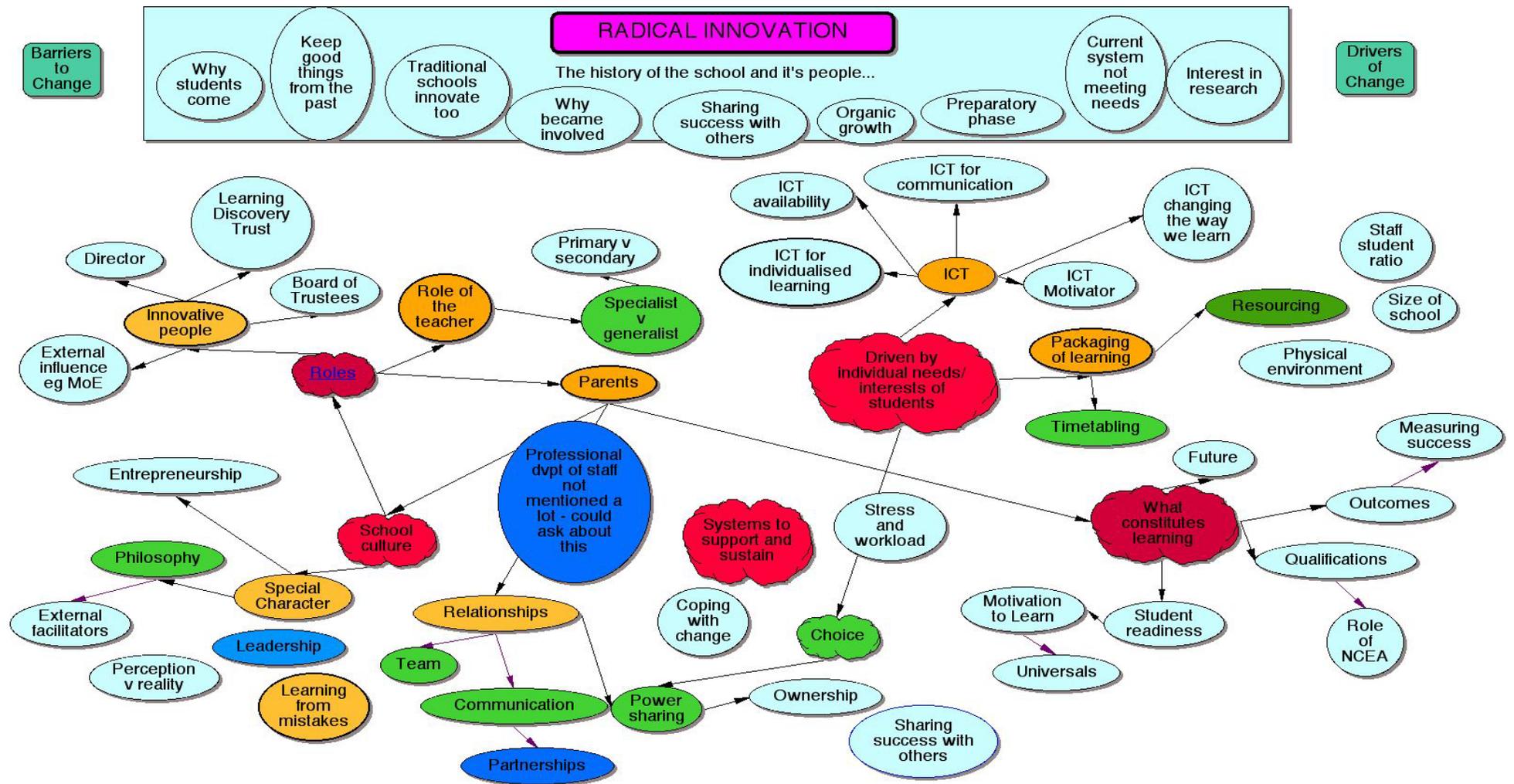


Figure 14: Theoretical Propositions

The area that had the most ideas connecting to it was that of the learning being driven by student needs and interests. From this, the way learning was packaged and the way in which ICTs supported learning were developed as key ideas. The importance of relationships was identified through its many connections to other parts of the map. It is integrated into many of the main headings. The main headings also have areas of interaction with other headings, highlighting the fact that none of the ideas can be seen in isolation.

Each of the headings was turned into a proposition, with the concept map ideas supporting the detail. Each proposition is expanded on in the following sections.

### **Proposition 1. Roles**

*Innovation in these schools was initiated by key people as drivers, without whom it is unlikely that the schools would be in existence. Once the schools were established, the roles of staff and parents created a core difference from other schools.*

The codings collapsed under the heading of *Roles* are shown in Table 11. These are listed in order, from the role that received the most coded examples in total to the role that received the lowest coded examples in total.

**Table 11: Codes Categorised Under the Roles Heading**

Roles	P1	P2	P3	P4	TOTAL
Role of the teacher	5	7	2	9	<b>23</b>
Role of parents	1	10	3	8	<b>22</b>
Innovative people	3	9	3	3	<b>18</b>
External influence	0	4	4	2	<b>10</b>
Directors role	0	3	2	3	<b>8</b>
Specialist v generalist	2	0	1	4	<b>7</b>
Learning Discovery Trust	1	2	1	2	<b>6</b>
Board of Trustees	1	3	0	0	<b>4</b>
Primary v secondary	0	0	2	2	<b>4</b>
	<b>13</b>	<b>38</b>	<b>18</b>	<b>33</b>	<b>102</b>

The three most important roles were seen as the role of the teachers, the parents and other innovative people. The role of the teacher is interpreted in these schools as being the role of the learning adviser, as this is the title given to teaching staff. These three roles are discussed in more detail, providing examples of participants' comments to support findings.

### *Learning Advisers*

Learning advisers were seen as performing an important function in these schools, in either driving or inhibiting innovation. As P2 states, they:

Haven't yet been able to get away from the importance of our staff - as drivers, glue in the community, provide sense of shared practice and implementation. Use lots of different adults but don't have data to ascertain whether that diversity is really working for kids. Staff are still central even though we have tried to downsize this. In some ways the staff have become more central, important not as people to defer to but in providing a sense of certainty (P2, 23/3/04).

One of the biggest issues was the role of advisers and if they didn't have the ability to innovate then the school would not be innovative. It is the people who make the innovation succeed or fail. The role of the advisers was seen as being quite different from the role in a traditional school. P1 describes this as follows:

The idea being that the most important use of the time is working with the individuals, meeting every student for at least half an hour a week one on one. Where are you at? How are you going? Have you thought about this? Have you done this? That role of checking on their progress in general, but in particular the individual learning focus, individual learning project which is at the heart of the learning for a lot of the students - not all (P1, 22/3/04).

Interestingly, while all participants saw learning advisers as being of great importance in terms of making the innovation happen, none of them believed most of the staff were great innovators. P2 describes the journey that staff are on as follows:

We're all on a journey of changing our thinking and it's, it's such a massive challenge because I think what I'm learning about radical innovation is that it you almost can't divorce it from the person. Like it kind of almost lives within the history of the person, the experiences, the life experiences of the person and you can, you can talk about and you can educate and you can set up parameters for the change and unless there's a kind of a recognition of the worth of that and a willingness to take your practice there it just doesn't pay, it doesn't work and I think that that there's a lot of safety around what people are doing and a lot of doing what you know and to develop the capacity to really risk is kind of not present in many of us, I believe, and that's a major challenge because like it or not staff are really important drivers in this community and they've got to be leading us in quite powerful ways (Participant 2, 23/3/04).

In UPT, where the school started with three co-directors and then went to two in the second year, there was general agreement that having co-directors was a good strategy. The change to be made would have been to ensure that they were there on common days so that communication lines were good. This has happened during the second year of the school to good effect.

### *Parents*

The pull to traditional education was strong and was reinforced by some parents. Although parents were attracted to the schools because they offered something different it could be difficult for them to cope with the difference. As P3 states:

Those sort of universals come in and also that parents may say that they want radical innovation, but they also want exam passes and qualifications and that sort of thing. And their caution, I was going to say timidity but that's probably overstating it, caution on behalf of their children is something that has to be acknowledged as well (P3, 24/3/04).

However, there was also acknowledgement that many parents were more involved in the schools and there were genuine attempts to work in partnership with parents. At the primary school level, where parents were more usually involved with their children's education, this was extended through the development of a collaborative research community made up of parents and staff. In the secondary school setting, this was developed through the use of parent coordinators and involvement of parents in programmes/support, when this did not usually happen in the secondary school setting.

### *Innovative People*

The NZ Learning Discovery Trust (NZLDT) members were seen as key people, as were the directors connecting together and with wider community, parents who wanted something different, and staff who did too. All participants made reference to the people who were the initial innovators, pushing for the schools to be approved by the Ministry of Education. P1 described these innovators as "People who push boundaries, love challenge" and "without them the school would have fizzled because no-one would have made it work" (P1, 22/3/04).

The members of NZLDT were appointed by the Minister of Education to be the Establishment Boards of each school. It was the Establishment Board that encouraged the schools to innovate, giving freedom and actively pushing for this to happen. In his concept map P2 described this group as key people who helped set up the original intent of the community and believed that much less would have been achieved if the key people hadn't connected together and moved the shared vision forward.

There were several key people in this group and it was acknowledged that without them the schools would not have happened. One of these, John Clough, was important in establishing the educational foundation of the school through his philosophies and experience with running alternative secondary programmes and with trialling discovery learning in the

primary school setting. The other leading influence was Christchurch ex-mayor, Vicki Buck. She was recognised for her “vision, energy, political savvy” (P1, 11/3/04).

The role of the policy makers both helped and hindered the development of the school. The local office of the Ministry of Education was seen as having supported the innovation. The Ministry, in general, was seen as needing “a lot of kicking along” in order to keep the project alive. The school’s approval depended on the ability of the Minister of Education to see the possibilities. P2 reports the Minister as saying, at the opening of *Discovery 1* that “Discovery is on the edge of my comfort zone. But what we do know is that schooling as we know it is not working for all kids, therefore diverse models of schooling are appropriate” (P1, 11/3/04). Without some vision for change and diversity from him, coupled with Buck’s tenacity, an innovative idea would have been lost.

#### *Other Roles*

Establishing partnerships was seen as important in keeping the secondary school moving forward. P3 notes that “if we isolate ourselves and just say look we're the innovative school, therefore no-one can teach us anything, then we're actually ah I think we're actually running the risk of not achieving our potential and not doing the thing that I think in part we were set up to do, which was to model and export innovation” (P3, 24/3/04). Reactions from other schools have been mixed, especially from the secondary school’s perspective.

External facilitators were also mentioned as being important in helping the schools to move forward. Both schools had used facilitators at key stages of their journeys and believed these facilitators to be useful in helping with thinking and keeping innovation alive.

### **Proposition 2: Student Role in Learning**

*The ability to individualise learning programmes for students is a significant shift from traditional schooling.*

One of the strongest common features of the data gathered from all four participants was the importance of having the learning driven by the needs and interests of students. Given that this is a core part of the special character of these schools this is not a surprising result. Table 13 shows the twelve codes that form part of this proposition, in order of total. ICT codes form part of Table 12, but are covered in more detail later in the proposition.

**Table 12: Items Coded to Student Interests and Needs**

Student interests and needs	P1	P2	P3	P4	TOTAL
Driven by student interests or needs	10	6	4	12	<b>32</b>
Packaging of learning	8	7	2	10	<b>27</b>
Choice	6	3	0	12	<b>21</b>
ICT for individualised learning	6	1	4	3	<b>14</b>
ICT availability	2	2	3	5	<b>12</b>
Timetabling	4	2	2	4	<b>12</b>
ICT as a motivator	4	2	3	1	<b>10</b>
ICT changing the way we learn	4	1	2	2	<b>9</b>
Physical environment	3	0	1	5	<b>9</b>
ICT for communication	0	3	2	3	<b>8</b>
Resourcing	1	2	1	4	<b>8</b>
Size of school	1	0	2	3	<b>6</b>
	<b>49</b>	<b>29</b>	<b>26</b>	<b>64</b>	<b>168</b>

The three most significant codes were *driven by student needs and interests*, *packaging of learning* and *choice*. P2 describes *driven by student needs and interests* as “kids being absolutely central to their own learning and by that I mean being able to make important decisions about what their learning looks like and to have a really critical voice in that process” (P2, 23/3/04). This highlights the importance of students having power to direct their own learning in a way that is quite individualised.

The “idea of allowing people to run with their enthusiasms” and to involve the parents in this process was seen as being positive. In comparing this with what happens in other schools P3 states:

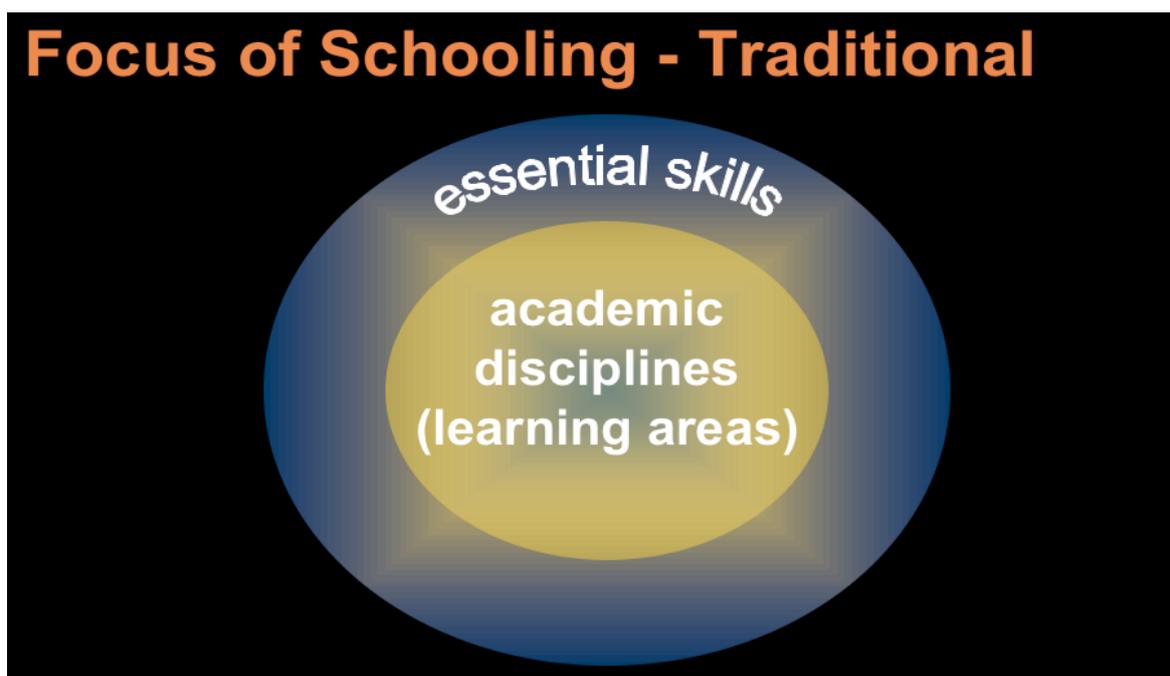
I think the single biggest thing that marks the difference is the focus on the individual needs and having the individual having a clear say. I was going to say a dominant say, I'm not sure that that's quite the case. A clear say in what they want to learn that's actually radical and when you organise learning from that premise, that the learner knows what they want to do and that and that those views have to be respected and you build around the individual (P3, 23/3/04).

Packaging of learning has been discussed in the earlier section on radical innovation. It is related to students driving their own learning in that each student has a unique programme designed to meet their own learning needs and interests. Research into education for *new times* suggests that these interests are important in preparing students for the many choices they will be able to make in their lifetimes. Luke (2003) refers to these as ‘choice

biographies’, which are “non-linear, risky pathways into and out of work, leisure, consumption, education that students are fashioning” (p.2).

The notion of choice was seen as preparing students for a complex future. In this sense it relates to the complex, non-linear view of innovation. Participants referred to the idea of choice as relating to many aspects of the school - programmes offered, when and where learning would happen, and what format the learning would take. It also involved having a say in how the school worked. This idea of student voice (Ruddick & Flutter, 2004; Kohn, 1993) is built into the values that underpin the schools. This did not mean that students had complete autonomy in their learning, but that they were expected to contribute.

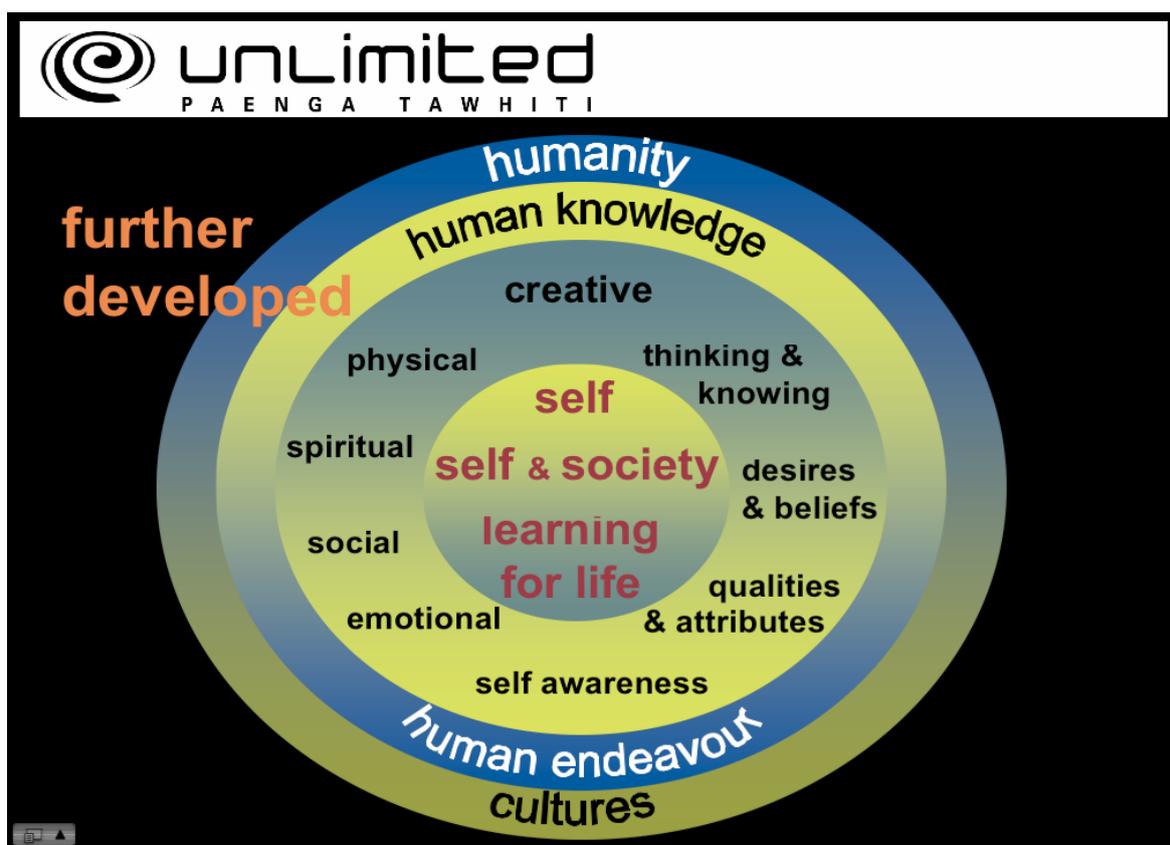
Documents obtained from UPT show how they see this differing from traditional schooling. Figures 15 and 16 compare the differences, between traditional schools and UPT, through the eyes of one of the directors. These Figures form part of a presentation about the way learning happens at UPT and are unpacked by one of the directors as follows.



**Figure 15: Traditional Schooling**

In the model of traditional schooling there is little room for student voice or passions. Learning is driven by the curriculum, not just in terms of the programmes taught but also in the way the school is structured. The curriculum then drives the organisation of the buildings, the departmental structures, the staffing and the allocation of departmental responsibilities. This infrastructure creates competition for students between the departments. The essential skills may be covered incidentally but they are not an explicit part of the way in which

curriculum is developed in most secondary schools. Figure 16 shows how the director sees learning at UPT as being different from this model of learning.



**Figure 16: Learning at UPT**

In this model the student (as an individual, as a member of various communities and as a life long learner) is the central focus of learning at the school. Surrounding the learner are areas of skills and competencies that support the development of the student. The curriculum, in its widest sense, becomes the context for this to be developed rather than the driver of the learning.

From this explanation, it can be seen that the curriculum, as determined by the Ministry of Education, is not a major focus of this model. Rather, it is expressed through the individual needs of the students. The individualised nature of learning at these schools is enhanced by the use of ICTs. A further proposition under the heading of Student Role in Learning is that ICTs enable individualized learning to occur in ways that were not possible in the past.

The findings regarding the use of ICTs in these schools are reported under the heading of student learning because that is where the majority of the comments fitted. The use of ICTs was not seen as a stand-alone item but as a transparent part of learning that enabled the students to be more individualised in their learning.

The initial five ICT codings used in the research are shown in Table 13. The description was used to assign codes, with some participant comments falling into several codes. Other comments did fall distinctly into one code in particular, reaffirming the differences between the codes.

**Table 13: Initial ICT Codes**

ICT Codes	Description
ICT as a motivator	ICTs motivating learning for all children, but some in particular.
ICT availability	Pluses and minuses of having ICTs readily available for students to use.
ICT changing the way we learn	How ICTs are used to help students learn in new ways.
ICT for communication	What ICT tools are used to communicate and how are they used.
ICT for individualised learning	Students can organise their own learning for when they want and where they want.

These ICT codes were re-examined for commonalities and differences and from this the main ideas were put together in *Inspiration* format, as displayed in Figure 17. Key ideas are represented in purple. From each of these key ideas, there are a number of arrows representing connected ideas. At the bottom right of the concept map it can be seen that I have identified the ‘use of experts’ as having some connected ideas of its own. This level of detail shows the role of people other than teachers in the innovation process, as they have specialised skills to share.

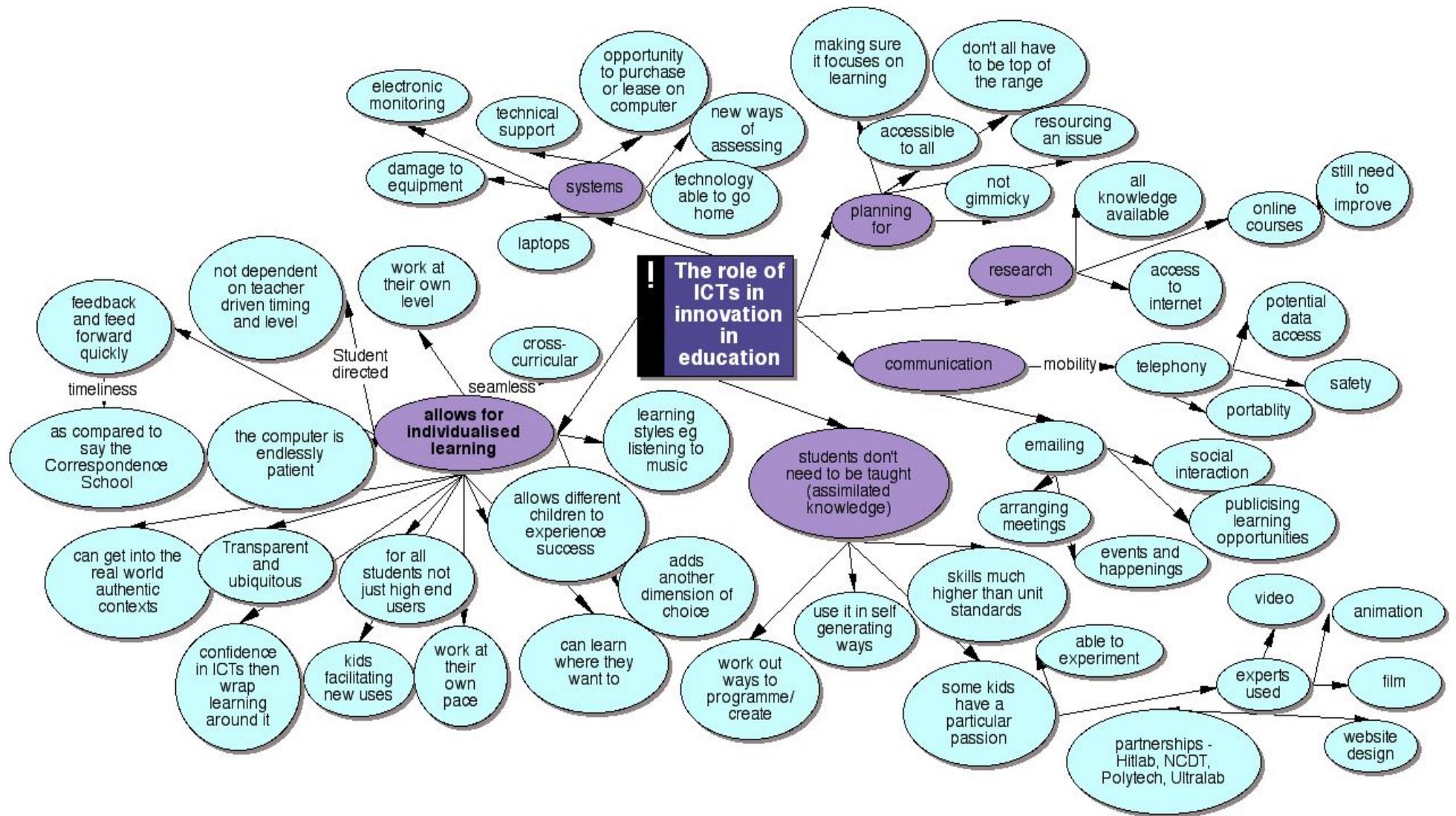


Figure 17: The Role of ICTs in Innovation in Education

From this it became clear that the main feature of ICTs in the schools were as follows:

- ICTs allowed individualised learning to occur in new ways;
- communication was seen as the most important use of ICTs, followed by research;
- students needed little formal instruction in the use of the ICTs;
- systems needed to be in place to support the use of ICTs; and
- a planned approach, based on the schools' core philosophies, was necessary.

This section is reported on under the headings of ICTs for individualised learning, the role of ICTs in communication and support systems.

### *ICTs for Individualised Learning*

P1 commented that at other schools, even ones that use a lot of ICTs, ICTs tend to be teacher directed and in curriculum silos, “whereas here it's where the students interests are and its across wherever the learning is and the students, with assistance from learning advisers, will be sourcing out these things themselves and finding out. It takes longer sometimes.”

Comments from participants indicated that most of the ICTs were self taught or learned from other students rather than ‘taught’ in the formal sense. While all children used the technology, there were some who were passionate about it and would experiment for themselves, often coming up with solutions that the adults had not envisaged or even thought were possible. For some students ICTs were a particularly powerful motivator and they want to try all the latest gimmicks. One participant (P3) pointed out that “Just so as long as it's always directed towards how is it meeting the learning needs of the students. I think that would be the key question to keep going back to rather than well this is a gimmick and it's good because it's just gimmicky.”

The ability to complete one's own work, at one's own pace using the internet adds a dimension of choice that was not there before ICTs were available. The power of the internet for accessing information implies that students need to have the skills to use the technology effectively. As P3 commented, “The question is being able to ensure that they're actually picking up reasonable stuff rather than all this rubbish or listening to music all day and that's something, those are issues to be monitored but that's natural that's just the way that kids are, that's the reality of who these kids are.”

The new technologies such as animation and video were seen as providing new ways for students to work and to get their ideas across. This would be a natural part of what they did for employment. It was seen as a whole new area that had a great deal of potential but was yet to be realised.

#### *ICTs for Communication*

Participants considered ICTs to be a great tool for dialogue, sharing and communicating generally. The ability to email provided quick and easy communication that enhanced other more traditional ways, rather than being seen as an alternative.

The ability to work from anywhere was seen as a big advantage in these schools, with learning offsite being seen as a powerful change force for what schooling is.

#### *ICTs Availability and Support Systems*

The availability of ICTs meant that the schools could “tap into the educational possibilities of ICT in a way that other secondary schools don't. Where you have computers in classes and you don't actually get access to them and all that sort of thing” (P3, 24/3/04). In this respect availability and accessibility went hand in hand. It was not necessarily that there was more technology than some schools, but it was more mobile, was able to be used at school or home and was more seamless in its use.

This did not always need to be the most sophisticated equipment and in fact the schools were not able to keep up with replacing this. What they did not want to do was set themselves up to be schools that were seen as being able to afford all the expensive gear when other schools couldn't. It was seen just as a part of learning, not as something special and separate.

What they also had found was that using technology in different ways was not yet easy “And I also think we're learning the disadvantages of it as well. It's starting to emerge that people who are, if you want to do your learning online it's actually a very difficult thing to do. Most people don't, well there's a higher failure rate with learning online. There's a social component to learning that actually makes it easier for them. So that, that's an interesting lesson we're learning” (P3, 24/3/04).

### Proposition 3: School Culture

*School culture has a strong effect on a school's ability to innovate.*

School culture is described by Barth as “the complex pattern of norms, attitudes, beliefs, values, ceremonies, traditions, and myths that are deeply ingrained in the very core of the organization” (Barth, 2001: 8). In these two new schools, school culture is not ingrained, but is being developed and the participants are trying to shape the cultures in ways that encourage sharing, strong relationships and innovative practice. As Barth states, “...unless teachers and administrators act to change the culture of a school, “innovations” will have to fit in and around existing elements of the culture. That is, they will be superficial window dressing, incapable of making much difference” (Barth, 2001: 8).

Table 14 shows the individual items coded to this proposition, listed from highest to lowest total mentions. Items categorised under this heading relate to the interactions between the people and their environment; how the people went about trying to make sense of this; and how they have developed a way of working that supports the special character of the school.

**Table 14: Categories Coded to School Culture**

School Culture	P1	P2	P3	P4	TOTAL
Learning from mistakes	6	7	5	5	<b>23</b>
Relationships	6	4	5	6	<b>21</b>
Power sharing	3	5	2	4	<b>14</b>
School Culture	1	1	7	5	<b>14</b>
Philosophy	6	3	2	2	<b>13</b>
Partnerships	0	0	2	8	<b>10</b>
Perception v reality	2	1	4	1	<b>8</b>
Team	0	0	7	1	<b>8</b>
Leadership	0	1	6	0	<b>7</b>
Special character	2	3	1	1	<b>7</b>
Ownership	1	2	2	1	<b>6</b>
Communication	0	2	1	2	<b>5</b>
Entrepreneurship	1	0	0	4	<b>5</b>
Sharing success with others	0	0	3	2	<b>5</b>
Professional development of staff	0	1	0	1	<b>2</b>
	<b>28</b>	<b>30</b>	<b>47</b>	<b>43</b>	<b>148</b>

In these two schools there was the belief that it was important to learn from mistakes, with this being the most commonly mentioned category. Participants also identified relationships

as being paramount in moving forward as a school. This is supported by other literature in change management, as Fullan states, “it is actually the relationships that make a difference” (Fullan, 2001a: 51). While this would be important in any school, the two ‘designated character’ schools were combining relationships in ways that promoted the sharing of power.

As two schools with a different underpinning philosophy, they are aware that they need to be, “deciding what the school stands for and sticking by it, not trying to keep everyone happy and be all the things that other schools weren’t” (P4, 23/3/04).

In general “culture is conservative: it works to preserve the status quo” (Evans, 1996: 17). Although there are organisations that break the mould and are innovative, Evans believes these tend to be new or young. “As they grow they typically become more conservative, hierarchical and structured” (Evans, 1996: 45). The implication for these two schools is that they may grow more conservative as time goes by. What seems innovative today may not seem innovative at all in a few years time.

**Proposition 4: What Counts as Learning**

*Traditional definitions of learning are subjective attempts to make meaning out of what happens in schools. Learning for the future requires a wider view of what learning is and how it can be identified, measured and supported.*

All participants were grappling with their own view of what learning is and how you can tell if students are learning, as evidenced by the following comment from P3, “So if students appear to be wasting their time is that a problem or not?” Added to their own attempts to define what learning looks like in these schools, the participants were also grappling with what the views of parents and students. Table 15 shows items coded to this heading. This included the thoughts of the participants, how they viewed student motivation and willingness, what outcomes might be considered important and what role external exams had in directing learning.

**Table 15: Items Coded to What Constitutes Learning**

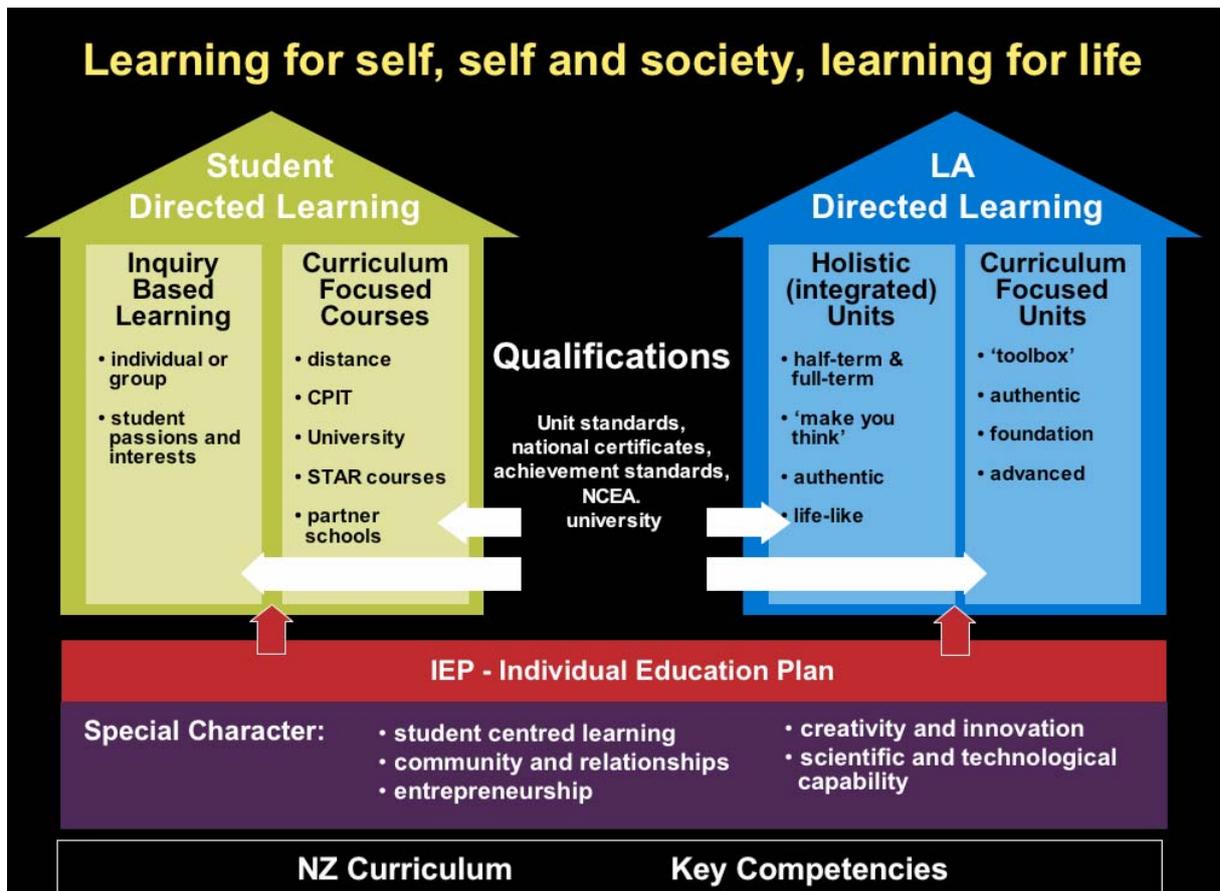
What constitutes learning	P1	P2	P3	P4	TOTAL
What constitutes learning	5	6	3	6	<b>20</b>
Motivation to learn	0	2	4	4	<b>10</b>
Student readiness	2	1	4	3	<b>10</b>
Outcomes	6	1	1	1	<b>9</b>
Measuring success	1	3	2	1	<b>7</b>

Qualifications	2	0	1	4	<b>7</b>
Role of NCEA	2	0	2	2	<b>6</b>
Students are happy	1	1	1	3	<b>6</b>
Future	2	0	1	0	<b>3</b>
Universals	0	0	2	0	<b>2</b>
	<b>21</b>	<b>14</b>	<b>21</b>	<b>24</b>	<b>80</b>

What counts as learning in these schools was clearly an important question for all participants. The motivation to learn and student readiness were linked, in that there were times students seemed keen to learn and other times that they did not seem ready. Participants were constantly re-examining their own attitudes and whether they should be providing more structure or more freedom to students.

The ability to get the right balance between structure and freedom was something the schools were grappling with, as P1 comments, “some students weren't learning, were using the freedom and the flexibility to sort of not do much work at all and we weren't quick enough finding it, acting on it, trying to support them, change them around but some of them drifted for too long.” The directors felt that there was a need to have some foundational skills as well as freedoms, “in a way that is not disempowering and taking away from the child's enjoyment of their learning, but actually adding to it” (P2, 23/4/04).

Documents from a presentation given by *UPT* staff show that the model developed makes the most of the passions of students and the abilities of staff in order to meet the requirements in new ways. Figure 18 outlines the model developed by staff at *UPT* and provides some insight into how they answer the question “What constitutes learning at *UPT*?”



**Figure 18: UPT Learning Model**

This diagram shows that the NZ curriculum and key competencies underpin the learning at UPT. The IEP is the driver of the curriculum, providing the scope and balance of learning, specific goals and long term vision for each student. There are two strands to learning. The first of these is student directed, where individual inquiry is the most significant aspect (representing 30-50% of their work for Years 9-10 and reducing beyond this depending on emphasis of senior students on courses that have qualifications). The second stand is directed by the learning advisers, but has a significant degree of consultation with students, and is delivered, where possible, in authentic contexts. The essence of each curriculum is extrapolated and units developed within either a strong curriculum focus or with a more natural holistic focus, whichever is appropriate. Qualifications fall naturally out of this organisation, but are not drivers for the learning. Students are encouraged to select courses for interest or use to them rather than for the qualifications. Success can be measured in terms other than qualifications.

Measuring success was one of the areas added to the interview questioning as a result of our preparatory meeting. As P3 commented when constructing his concept map, you've "Got to have clear understanding of what it will look like so know when get there - need measures."

For those in the secondary school in particular there was the dilemma of external exams. This was particularly a focus for parents who still worried that their children would not do well. Given the press reports regarding league tables for NCEA, this was seen as being destructive, so even although the school did not need to buy into that, P3 commented that “if no one from here gets NCEA it will probably affect our standing” (P3, 24/3/04). This is clearly an issue that will require further unpacking by the community, if the vision expressed in Figure 18 is to be achieved. The use of the school’s *Inquire* programme, which tracks student learning, is expected to develop community understanding of what constitutes learning.

In the *Unlimited Paenga Tawhiti* (UPT) Annual Report for 2003, the development goals include an extensive section on Teaching and Learning. This suggests a number of strategies that will be used to determine success:

- 1.4 To establish action research and critical reflection processes within our community
  - Staff self-review end of Term 1
  - School self-review facilitated by Julia Atkin, against our special character (2 full and one half day)
  - Student evaluation questionnaires Terms 1 & 3
  - Review of induction programme for mid-year intake
  - Parent discussions groups to review the effectiveness of the school against parent expectations. (*Unlimited Paenga Tawhiti* Annual Report, 2003: 2).

Meanwhile, discussions at a D1 board meeting discussed the expectations regarding student learning by suggesting that students leaving the school would:

- leave with an exceptional level of literacy;
- keep up with peers;
- have a sparkle in his eye;
- have confidence;
- be excited about life and learning;
- be satisfied with their level of achievement;
- have inner strength;
- have a sense of self / self awareness;
- not be limiting their options;
- question;
- increase their choices; and
- have power rather than needing to be empowered by someone else.

It can be debated that these are goals that most schools would hope to achieve, especially primary schools.

Ways of measuring the success of the schools were seen in the following terms:

- Feedback from those involved with the school. As P3 commented, “I think it's just a matter of what the people associated with the place feel about it. If they feel it's successful or not” (P3, 24/3/04). This is very much a subjective, value based judgement. P3 believed that people would currently have a feeling that the school was a good place to be.
- The learning is seen as relevant by students, that they would say, “I feel as though I'm learning interesting things and I feel as though the learning is relevant and I'm enjoying the learning. It's fun and it's taking me to where I want to go to” (P3, 24/3/04).
- Feedback from external sources such as ERO.
- How the staff feel it is successful.
- Whether learning outcomes are achieved. There are two elements to these outcomes. Some may be generic outcomes expected of all students based on the special character and schoolwide expectations. Others will be individualised, based on the learning goals set by the student, in conjunction with their learning advisers and parents. P4 identifies the students' learning stories as an important component of judging success:

... the learning stories from the kids that are a powerful record of their actual learning, their portfolios and their evidence of learning, their ability to articulate the things that they've um benefited from, from what they've been engaged in and the difficulties they've encountered and how they've overcome those difficulties. The um things that failed for them and the things that didn't go well. That's actually the most effective way of telling us about how powerful the learning has been or how successful that learning has been. Um, at the moment um that actually is taking time for staff to develop the ability to do that and part of that is being able to ask the right questions. It's about how we look at the learning from go to whoa. how involved the students are in the writing of the objectives for their learning and so they know from the outset what is it that I'm actually wanting to ... their ability to actually articulate that themselves is part of the, a really important part of, what we do as learning advisers and how we empower the students to actually develop those skills and have that opportunity. So um yeah, that's where we want to be. We're sort of part way there for some of our learning advisers in terms of more formal approach in terms of like objectives in the curriculum, students doing some um self assessment on a four point scale yeah, in terms of yeah, and articulating some of the issues and what was the future focus so that's what practices for some towards the other (P4, 24/3/04).

### **Proposition 5: Structure**

*The structure and systems needed to support and sustain innovation develop as new learning becomes consolidated.*

The literature on innovation indicated that sustainability of innovation was an issue. As these schools are both relatively new it is too early to ascertain whether they will be able to sustain innovations and continue to be innovative. Table 16 highlights that the participants do think that systems are important to develop.

**Table 16: Items Coded to Systems That Support and Sustain**

Systems to support and sustain	P1	P2	P3	P4	TOTAL
<b>Systems to support and sustain</b>	1	2	6	7	<b>16</b>
<b>Coping with change</b>	0	1	5	2	<b>8</b>
<b>Stress and workload</b>	0	2	0	6	<b>8</b>
TOTALS	<b>1</b>	<b>5</b>	<b>11</b>	<b>15</b>	<b>32</b>

In particular, the two directors who work full time in the schools believe systems need to be in place to sustain innovation. For them, the need to embed change before moving on is important for building on new ideas and leading to cultural change.

P3 described the need for support systems as needing “to build up momentum that becomes part of the culture - embedded in operations of school rather than an add on. What's doable, what are the priorities... So I think the business of innovation is much more complex than people realise and if you want to do it properly it really has to be nurtured by a very carefully thought out system” (P3, 23/3/04).

Rogers (1995) describes the early stages of the innovation as the implementation stage, which “may continue for a lengthy period of time, depending on the nature of the innovation. But eventually a point is reached at which the new idea becomes an institutionalized and regularized part of the adopter’s ongoing operations. The innovation finally loses its distinctive quality as the separate identity of the new idea disappears” (p.173). The schools are not yet at the stage where the changes they are an invisible part of the school, or that they can be taken for granted (Sherry, 2004). As innovations become institutionalised it will then be time to sustain the changes. At present, continuity in running things can be a problem as students are often in and out of a range of activities and new ideas are constantly being tried.

There was mention that the controls that were put in place needed to always consider learning and should not get in the way of the learning, but rather enhance it. There is the need for flexibility in structure and this is hard to achieve.

One of the structures to support individual learning in the secondary school that had been tested in various ways was the use of timetabling. This was identified as one of the biggest barriers to change in traditional secondary schools. A number of different ideas had been tried, including quite loose structures and tighter timetabling processes. The advisors found that the students were more motivated to attend classes when they had the choice of whether to attend or not. P1 described the process of trying to be quite tight in terms of student timetabling and then what happened when they changed the way of approaching this: “And suddenly the kids were turning up in their droves better than when they were turning up when it was compulsory. When it was compulsory you had to go round and try and find them and say aren't you supposed to be in...” (P1, 22/3/04).

One of the key questions related to how the learning advisers' time could best be structured to support learning: “How do they spend their time? What's the most productive use of the learning adviser's time? Is it running sessions for students? Is it motivating them with new ideas, new ways of thinking? Is it working one on one with students?” (P1, 22/3/04). This is continually changing. One of the recent structures put in place to help learning advisers support learning was the creation of a digital recording system which provides places to document student goals, timetables, successes, learning stories (written, audio and video records). This ability to track progress was a developing effort to measure success in a systemic way. Importantly, this has been developed by one of the staff in consultation with other staff. P4 explained that the software has galvanised the process of assessment when in the past recording had been a chore.

Fonesca (2002) tells us that innovation cannot be managed or engineered. “As soon as we try to control interaction from an external standpoint, we simply terminate their transformational potential. Instead of elevating the individual as solitary hero of innovation, we come to the more humble realization that it is the quality of participation in ordinary conversation that is the key to innovation.” (p.120). It is the interactions that the directors have with each other and with their staffs that keep the forward momentum for innovation in the schools.

### **Unpacking the Propositions Further**

From the results so far several questions arose that I did not feel had been answered. These related to the role of leadership in creating innovation and whether the directors considered staff development to be important. These were questions I considered when constructing the organisation of the focus group meeting.

The focus group met to verify the initial findings and to discuss any gaps. The organisation for the meeting is shown in Appendix 5. The interaction between the four participants and myself as researcher lasted an hour and a half. A Powerpoint presentation showing the key results described in this Chapter was presented. Each section was worked through, starting with the definition of radical innovation, then moving through each of the five theoretical propositions. Results of the interaction led to some changes in interpretation and these are explained on the following pages. It was the interaction of the focus group members that was the most interesting. As P4 explained when he had been listening to others talking about a particular idea “The allocation of power...that’s something we haven’t emphasised enough, I feel, but it’s coming through in our conversations now.”

It was the definition of radical innovation that provided the most intense dialogue. The notion of radical innovation as repackaging was discussed at length. “What’s radical is that it starts with the student’s choices, interests, passions, their journey, where they are and where they want to go” (P1, 10/11/04). There was agreement that it was the systemic level of innovation that made it radical - it was conceptually different even if the bits were the same. It was the way things were recombined, but the focus was on the roots or foundations leading to a different way and coming from a different schema. However, P2 argued that repackaging could imply that the schools were coming from the same schema, whereas the two schools were doing more than that. Beyond repackaging there was the development of ‘greenfields’ innovation which involved stepping on new ground. P4 commented that he had not seen the climate of innovation in other schools.

In terms of radical innovation then, the focus of being foundationally different was strengthened as being beyond repackaging - the notion of ‘greenfields’ innovation. Participants had more examples of both repackaging and greenfields ideas to share and by the end of the discussion had a clearer interpretation of how they viewed innovation.

When explaining each of the propositions I began with the key statement as italicised at the beginning of each proposition. I then showed the coding table and discussed any findings I wanted more information on. When discussing Proposition 1 I explained that there had been few codings regarding the role of leadership and asked the question “What role do you see leadership playing?” All participants thought this was important, with two commenting that it was even more important to be articulating, making explicit the vision and creating the culture

in order to maintain the special character of the schools. Leadership needed to be distinctively different in that it was important to model new thinking, courage, power sharing and risk taking. These aspects of leadership were not often present in traditional school leaders. There was agreement that the leaders in the schools were more accessible and visible, not just because of the way of operating but the physical structures that provided few isolated spaces. Participants believed that distributed leadership was more common in these schools - there was a huge degree of trust given to people in terms of license, belief in their work, and behind the scenes support. When reflecting on their previous roles they saw the genuine devolving of roles and the more hands-on approach as quite different.

Proposition 1 was reinforced by the participants and the idea that power was a key concept developed. Participants believed that the roles were much more reflective of partnership and shared power. There was recognition that the schools were not run as democratic schools so partnership was not fully shared and the leaders had a responsibility to ensure that the special character was preserved.

During the focus group discussions all participants highlighted the importance of individuals being able to choose for themselves – this was mentioned time after time before we even got to this proposition, so *Proposition 2 Student Role in Learning* seems to be strongly agreed with. I asked the participants to compare this with a typical NZ country school where there would be a wide range of age groups and where students may all be working at an individual pace. Participants believed the two ‘designated character’ schools provided a much wider range of approaches, so the learning may be captured in ranges of experiences during the term or a student may do a term’s worth of maths and that might be all that happens. There were few places that had the flexibility for all students to choose for themselves. It was emphasised that the high school students preferred to be at school than elsewhere. They made this choice because of the relationships built up within the school environment. They were there after hours and in the holidays because of the sense of community and the breadth of opportunities.

The role of ICTs was seen as important, with many of the ideas being reinforced, particularly the importance of accessibility and the way it was used in authentic contexts, not in a lab situation. Lack of structured use or timetabling, and the time to play and learn through interacting with the technology was seen as radically innovative in the school setting, yet this is the way that many of the students learn in outside the traditional school environment. Several new developments were mentioned in the secondary school context – the access of

staff to digital equipment had been extended so each staff member had a digital camera to capture learning. This went hand in hand with new developments in using ICTS to track student learning in ways that were radically innovative. This thinking had been extended for the new building space being developed, so that there will be a 'diary room', - a quiet space where students can go to capture their learning.

When looking at the specific role of ICTs I asked participants the question "Would radical innovation be possible without ICTs?" All agreed that you could, that power and choice was the crucial things, not the ICTs. However ICTs made innovation easier, introduced new possibilities and made learning more exciting.

In looking at the information presented under Proposition 3, related to school culture, I discussed whether what may seem innovative today may not seem innovative in a few year's time. The comment was made that as others follow, it stops being radical. It just becomes one of the tools that people use and suddenly you would be on to the next innovation. This means the schools must either be continually trying to move forward in their thinking, or hope that other schools follow their ideas and the 'special character schools' become typical schools. It "often requires a long period of time from the time they become available until the time they are widely adopted and used" (Sherry, 2004).

I also asked the question "What role does staff development play?" as this was another area they had made little previous comment on. The comment was made that at UPT all staff are the gatekeepers of knowledge, whereas in a traditional secondary school there are a few that hold the knowledge for NCEA (eg the Y13 calculus teacher may hold the most power in the maths department). Staff development has focused on all being able to take part because all the staff wanted the knowledge – there is a role for everyone not just a vested few. There was a focus on staff needing to be action researchers who share their learning both internally and externally and developing a genuine sense of partnership.

There was reinforcement for the role of professional development that continued to develop the school culture but also the need for professional development systems to be innovative to reflect the special character, rather than reinforcing traditional approaches. Financing professional development was an ongoing difficulty.

When discussing Proposition 4 it was mentioned that at a recent parent forum the parents tried writing a learning story about their child's start at UPT. This was seen as a powerful way of showing them how the learning was recorded and how useful it could be. This would be used and developed further.

There was also some discussion about the schools tracking what was happening for leavers in the future. This could include asking questions such as: Have they left with a desired pathway, are they positive about the experience? Are they still interested in learning? What are the parents' thoughts? What about those who left 3 or 4 years on?

One of the questions I asked the participants during this section of the focus group discussion was "So if students appear to be wasting their time is that a problem or not?" While they agreed that it was a test of the approach they believed it was an essential ingredient on the journey. They were getting better at seeing learning in terms other than traditional 'on task' behaviours but they still ask themselves what is my role? Is it my fault?

I also asked them to make a comment on the statement "if no one from here gets NCEA it will probably affect our standing." This was to dig deeper into the pressure they felt to conform to external monitoring processes. Participants from the secondary school answered that it was possible that if no one from UPT received NCEA credits it would probably affect the school's standing. While this was important and may affect people's perception it was seen as a short term problem. The secondary school has chosen to be brave and not make NCEA a focus. The directors believed it was currently easy to manipulate data so that you were ranked first but the school was not prepared to buy in to this sort of thinking. One comment was that NCEA could be achieved in all sorts of ways – even a four day cram session could cover requirements. NCEA was not considered the prime focus, but one of many ways of assessing learning - and learning was the prime focus.

Proposition 5 regarding the setting up of structures and supports to consolidate innovation was agreed with, with little general discussion.

I also planned to ask the question - Which of the emerging findings would I expect to see in any school? But I felt that this had already been covered by the in-depth discussion about radical innovation. Due to time constraints for participants the last question, related to the question what affects innovation (i.e. drivers and barriers) were collated after the focus group.

Ideas from the meeting were combined with their emailed additions, to form the results shown in Table 17.

**Table 17: Identified Drivers and Barriers to Innovation**

<b>Drivers</b>	<b>Barriers</b>
<b>People – individuals &amp; stakeholders</b> -The NZLDT -Like minds -Key parents -Believers -Julia Atkin or other external facilitators	<b>People – individuals &amp; stakeholders</b> -Parents fears for their children -The experience/schema of staff and community
<b>People - students</b> -Learning for the students	<b>People - students</b> -Students just being teenagers-natural reluctance for them to move outside their comfort zone.
<b>People – attributes and culture</b> -Team effort and interaction of the people -Critical reflection particularly combined with opportunities for progressive discussion-i.e. the thought processes take you to new territory. -Diverse minds - staff with diversity of personality, thinking -A climate where questioning is OK -Leadership of change	<b>People – attributes and culture</b> -Natural learned behaviour -Critical mass not yet achieved -Human frailties -Time to make change and reflect
<b>Ministry of Education</b> -Some have future vision but not usually the resourcing people -Secondary futures initiative	<b>Ministry of Education</b> -Ability to change direction quickly lacking -Timeliness of response to deal with innovation or things that don't fit the guidelines
<b>Learning from others</b> -International research -Action-research model in use -Links with other schools e.g. new schools	<b>Learning from others</b> -Breaking new ground -External perception
<b>Special Character</b> -Vision of special character	<b>Special Character</b> -Practicalities of fitting in special character with the resourcing and structures provided

Headings under drivers and barriers were the same in each instance, with different aspects of the same item being listed in the relevant column. People were considered to have the biggest effect on innovation, both positively and negatively. The effect of individuals also had an impact at the cultural level, when the individuals were interacting with each other. There were more drivers in this area and the role of leadership in directing this must be considered a key feature in enabling innovation to occur.

Ministry of Education systems for establishing a new school were considered a barrier, especially funding and property issues, as identified in the following extract from the 2003 UPT Annual Report:

Preliminary budget for 2003 established, but we were unable to confirm budget because:

- The level of funding for Cash for Property and Term 1, 2 and 3 quarterly payments were significantly late
- The level of operational funding – it was agreed with the Ministry that the school would receive operational funding for 80, but it was actually funded for 40 until December 2003 (*Unlimited Paenga Tawhiti* Annual Report, 2003: 4).

In a follow up discussion with Ministry of Education officials, the directors and board members outlined the following items as hindering the development of the schools:

-slowness of response to queries and variation between parts of the ministry, with no one person acting as the liaison person. Sometimes this felt like “punching candyfloss.”

-need to have a clear process articulated to those who want to proceed. To succeed at present requires a high level of bloody mindedness

-there was no capacity for a development director or dealing with oddity. There does not appear to be consistency with the staffing given to set up these schools compared to new state schools being established.

-when things did not fit the current model it was very hard to make changes. “Policy and pragmatics were not the same.”

-there was a perception that setting up the schools was a risk as they might fail. However, under the traditional model, there were a number of schools failing students.

-too much money needed to be spent on red tape such as consultants. These consultants had to be directed by the establishment boards but were accountable the Ministry.

It was recognised that the Ministry had been supportive in other ways, especially locally.

The role of others was also acknowledged as contributing to innovation. This has been discussed under the first theoretical proposition. The role of the special character in contributing to innovation is unique to the two schools in that the ‘designated character’ includes a focus on innovating and pushing the boundaries of schooling. It was also acknowledged that this was harder to achieve in practice, due to both internal and external forces but with resourcing and compliance being two particular inhibiting factors which the schools had little control over.

The drivers and inhibitors to innovation suggested by the participants in this study are not dissimilar from those supported by the literature (Gilbertson *et al.*, 2001). As already summarised in the theoretical framework guiding the study (Table 3) the factors driving or inhibiting innovation are individual, organisational or external.

Chapter Five has reported the results of the research, outlining my interpretation of the participants' views of radical innovation. Five theoretical propositions were established, and then these were reported back to the participants during the focus group meeting. This was an important final member check, but also provided the opportunity for any new ideas to emerge and for participants to interact together with the data.

As a result of the focus group meeting final comments have been presented. Chapter Six establishes the major findings of this study, based on the information presented and referring back to the purposes of the research and the key questions focused on. Following this, implications for the two schools, NZ schools in general, and for policy makers are discussed.

# CHAPTER SIX

## CONCLUSIONS AND IMPLICATIONS

### Introduction

This concluding Chapter provides a summary of the research, a discussion of the major findings of the study and the implications for the future.

In Chapter One, the key research questions were identified as:

- what makes for radical innovation in schools?; and
- how is the use of ICT implicated in innovation in schools?

These questions were answered through the aims of the study which were to:

- to identify the features of radical innovation in schools;
- to explore the barriers against, and drivers for, innovation to occur in schools;
- to provide insight into the use of ICTs to influence innovation in schools;
- to contribute to the literature regarding innovation in; and
- to identify future opportunities to innovate.

In Chapter Two, I reviewed the literature to develop a greater understanding of some of the key terms and understandings about innovation, within the business and education environments.

In Chapter Three, the research design and methodology, which uses symbolic interactionism as its approach, was described. Throughout the research, the interactions of the participants with their environments have determined their responses to the questions posed. The focus group discussion gave the participants and researcher a chance to interact with each other in ways that drew out new ideas. As researcher, I was also subject to the interpretation of the environment and the participants, so elements of trustworthiness were developed and explained in this Chapter.

Chapter Four presented the results of the study from the perspectives of the participants as individuals and also as a group. Subsequently, from this, in Chapter Five the findings were unpacked to develop five propositions regarding innovation.

In this final Chapter, Chapter Six, my findings, based on the review of the literature, interaction with participants and their environments and the subsequent propositions are interpreted. This synthesis of information is used to reflect on major findings of the research, with reference to the aims of the study. Implications of the study are discussed and new research ideas for the future suggested.

## **Major findings of study**

### *Radical Innovation in Schools*

This study supports the idea that innovation ranges on a continuum between incremental and radical. To be considered radical, innovation must be systemic, building from a different foundation or belief about what school is about. Starting up a new school is the easiest way of achieving radical innovation, but does not guarantee that radical innovation, or innovation of any kind, will occur. Many new schools have been set up with some progressive ideas, but are still conforming to the unspoken ‘rules’ of our education system. In such cases there have been some ideas introduced to programmes and processes, but not as a total repackaging, let alone a greenfields approach.

It is hard to find other schools that are towards the far end of the continuum in terms of innovation. This makes innovation quite a lonely job and also puts pressure on schools to be constantly developing new ideas and to share these with other schools. Sustainability is an ongoing issue. In the case schools the directors have tried to embed innovative practices into the fabric of the schools but the sustainability will depend on the ability of the people to work with each other, resources and external agencies. It is too early to establish how the schools will sustain their special character – whether they will move back to more risk averse thinking or continue to be pushing towards the fringes, This will depend on whether a critical mass of staff are able to push forward and whether parents and students can support that movement.

Robinson describes innovation as “an idea, practice, approach, process, system or object which is perceived as new by an individual, group or organization. What is familiar in one context can appear as an innovation in another” (Robinson, 2001: 16).

The directors of the case schools saw innovation in their schools as being an idea that was fundamentally different, from the roots. Innovation implied a change that was looking for positive improvement rather than change for changes sake. Something new was created and implemented in line with the special character of the schools.

### *Barriers Against, and Drivers for, Innovation to Occur in Schools*

The driving forces of innovation were identified as being from three sources – the individual, the organisation and the external environment. The greatest individual drivers of innovation were a small number of people who were there from the early stages of the development, as trust members, educators or parents. It was the ongoing support of a few key people who kept innovation alive and kept things moving forward. Other individuals could act as barriers because their views were less progressive. Even in schools set up to be foundationally more innovative there were still these pressures. However, the strong drive to innovate from key people was greater than would normally be the case in other schools.

Organisationally the development of a culture that supported the ‘designated character’ was a key drive for innovation. The ability to employ people who would fit into this culture was important. Once they were in the school the process of induction aimed to develop them as team members who understood the special character, believed in it and were prepared to create and innovate by risk taking. The drivers in this area outweighed the barriers, especially as a critical mass of staff were employed and working as an innovative team.

Externally, the Ministry of Education was acknowledged as having supported the establishment of the two ‘designated character’ schools. However, it also provided many barriers in terms of ability to change direction quickly, to communicate well and to make allowances for difference. In the set up phases of the schools’ development it was only the driving force of key individuals that kept the establishment of the schools alive.

### *The Use of ICTs to Influence Innovation in Schools*

ICTS are not an end in themselves and are not necessary for innovation to occur. However, the participants agreed that ICTs had the potential to transform schooling by providing tools that allowed students to learn in unique ways. The infrastructure within the schools allowed for ICTs to be readily accessible. While a number of schools can boast wireless networks, high speed access and a high number of computers per student the case study schools were using ICTs in ways that were transformational. For this to occur the schools were focusing on using the ICTs to support individualised learning and the ICTs were purchased to meet the priorities of students. The ubiquitous nature of the ICTs was a feature of the ‘designated character’ that was different from other schools and was seen to be supporting innovation (rather than driving it).

The use of ICTs for communication enabled students to share and gather information in new ways. Even the way that students and staff kept track of learning through digital portfolios supported using ICTs in transformational ways. This was embedded into the whole notion of learning rather than being a taught subject or add-on. This is a radical use of ICTs and one that has buy in from the students.

### **Contribution to the Literature on Innovation**

This study has contributed to the literature by providing information about innovation in a unique context. While many of the ideas undertaken in these schools are not new, taken in their entirety they are breaking new ground. This is packaging ideas in ways that are foundationally different. There are also aspects of the schools that are ‘greenfields’ which participants saw as being radically different. This was especially so at the secondary school, where the gap between UPT and other secondary schools was quite marked.

The most innovative feature of these schools was the student role in learning. The notion that students could have more choice in their learning and follow their passions is one that is talked about as being desirable in schools of the future. However, there has been little written about how this can be achieved. This research provides some examples of implementation and will be of use to those wanting to be more innovative in their own schools.

Thirdly, this research provides a useful model (Figure 3) for outlining the extent of innovation in schools and the role that ICTs play in innovating. This ‘Doig Model’ of Innovation and ICT use can be used to establish where schools are at in their thinking.

### **Future Opportunities to Innovate**

These opportunities have been provided by the school culture that is being built around the notion of innovation. As time goes by the participants have a better understanding of the drivers and inhibitors. As this understanding develops they will be able to look at ways to strengthen drivers and reduce inhibitors.

One of the greatest factors in developing an innovative environment was the influence of all the stakeholders. There is a strong pull back to traditional models and this was also identified in other research undertaken in the school. In the research completed by Canterbury University, the researchers commented that: “Reconstruction of schooling is extremely

difficult to achieve because what you are asking for is that all stakeholders (either within the school setting itself or located in its wider social context) forget their existing understandings of school” (University of Canterbury, 2004). The research undertaken here would support the notion that education is a very complex process, involving multiple stakeholders who do much to help and hinder radical innovation attempts. This is driven by the beliefs about schooling as shown in Figure 18.

As reported in the previous Chapter, people can be the greatest drivers or greatest inhibitors of innovation (Watt, 2002). This finding is supported by the OECD's ongoing research in the area of innovation in education.

Parents and the public at large often expect schools to excel in traditional, familiar tasks rather than to experiment with new approaches, especially if they perceive a conflict between the concern that their children learn key “basics” and the adoption of new ambitious curricula, organisation or methods. Examinations, testing and assessment regimes that underpin qualifications and accountability policies exert powerful constraints on schools that wish to move towards more active learning and cross-curricular competences, pressures that, if anything, are increasing. There is the real question of how far schools and teachers themselves have developed the skills and expertise entailed by the move towards lifelong learning. And with the sheer volume and persistence of recent school reforms, an element of “fatigue” may have set in among those continually expected to embrace new changes. In sum, there are powerful tensions at play (OECD, 2000: 14).

Traditionally, an innovation is a relatively discrete practice, product, process, or organisational arrangement that is to be diffused, disseminated, or introduced to users throughout the system. This process takes place in three stages: initiation, implementation, and institutionalisation. Change agents or change facilitators promote the awareness of the innovation and encourage its use through a dissemination strategy that combines various incentives and supports. Since systems seek to maintain equilibrium, the innovation encounters varying degrees and forms of resistance as it diffuses (Knapp, 1997: 249).

## **Implications**

### *Implications for the Particular Schools*

There is a need to be outward looking rather than insular, otherwise innovation is limited. Given that there were few schools with ‘like minds’, strategic partnerships are even more important to find. My notes from the focus group discussion recorded that, “All agreed it was easy to be soaked up, burned out, insular and quick to just see own issues. There was an acknowledgement of the need to have an outward focus and value amazing things elsewhere – especially important in these communities.” At the same time, the ‘designated character’

includes a focus on acting as a catalyst for change in the wider educational environment. This implies a need for the schools to continue to innovate and to share their ideas with others through conference presentations, hosting visitors and sharing of documentation.

The special character connects the learning together, which makes it even more crucial that the special character be maintained. This places extra pressure on the leaders to keep true to the beliefs and to ensure that systems of induction for all focus on the cultural aspects of the 'designated character' schools. This keeps the focus on relationships.

There is a need to develop a way of collecting data from leavers, to see whether they think the schools have been successful. A number of suggestions for doing this were recorded, as already reported. However, none of these ideas are any different than would be suggested for any school. The biggest implication is that schools wanting to be radically different need to be prepared for a great deal of hard work.

#### *Implication for NZ Schooling*

At the time of completing this dissertation the Ministry of Education had just turned down applications from one other Christchurch provider wanting to set up a 'designated character' school. An application to begin a second Discovery School will be considered as an option to be included in the consultation phase for the growth options in the Halswell/Oaklands area. While this is not a definitive 'no' there is no guarantee that any 'designated character' schools will be developed in the future.

In terms of the research undertaken for this dissertation, there is a clear indication that the two schools attract a steady stream of students who want something different, or whose parents want something different, out of education. If these schools were not available, students who wanted something different would be forced to enter a school that they did not feel met their needs, or to drop out from schooling. Where more choices are available, student needs are better met. While the current situation in Christchurch allows for this to happen, elsewhere there is limited choice. By keeping the special designated school option open the Minister of Education will allow other possibilities to be explored, allowing for further schools of choice, options and diversity (Hargreaves, 1997; OECD, 2000).

Both schools have many visitors through their doors on a yearly basis. The directors are aware of the role they play in taking people out of their comfort zones. The constant seeking to be

innovative and to make mistakes along the way are underpinned by a philosophy that is different “from the roots” (P1). While this cannot be replicated in other schools, it can provide useful ideas that can be used in other school settings.

The other implication for New Zealand schools is that ICTs can be used in ways that enhance learning, without having to be timetabled and structured. Where the ICTs are more mobile, the learning can be much more transparent. If a school wants to be innovative ICTs should not be an add-on, but should be embedded in the learning philosophies of the school. ICTs can be used to record and manage student learning in ways that support the learner, rather than being constricting and conforming.

#### *Implications for policy makers*

As part of the continued focus on school leadership, the Ministry of Education could provide more options for co-directorships to occur. Given the special nature of the schools involved in this study this is particularly important and one of the changes that was made by the NZLDT between setting up D1 and UPT. These schools were established as state schools therefore are subject to the same requirements as any other. The reality is that individual programmes require more intense time.

Evans (1996) makes the comment that, “Few school administrators receive the regular training in organizational development and innovation that is common among business executives” (p.4). The research participants had had no prior training in innovative practice, but had self selected themselves for director’s positions because they were interested in being more innovative. In their work environment they interacted with other people who wanted to push the educational boundaries. One of the implications for the training of school leaders is to ensure that innovation is part of the training for principals and that there are regular opportunities provided to grow innovative educators.

There is also lack of professional development for teachers in the area of innovation. As the OECD states, reforms have led to “school and teacher development activities being directed largely towards the incorporation of changed procedures or regulations, rather than to developing new practices” (OECD 2000: 15). There is little focus on innovation by the Ministry of Education, as shown by doing a search on their website. Any current references to innovation relate to students at risk, rather than being institutional or systemically focused. This is a deficit model that has real potential to be changed to a more proactive approach.

One of the issues relating to this is the lack of funding for professional development and the availability of top quality consultants who can work in schools. Both schools had used consultants to keep pushing them forward, but none of these were New Zealand consultants as experts in this area were few and far between. There is a need to grow our own ‘experts’ and support their progress on an international front.

There is also the need for policy makers to look for ways of allowing for schools to apply more innovative practice into their programmes or schools. The balance between school autonomy and nationally defined parameters about such things as curriculum, performance and funding needs to be constantly revisited. As the OECD points out in its work on *Innovating Schools*, national reforms can conflict with local innovation (OECD, 2000: 14). Flexibility needs to be developed so that schools that do want to surge ahead with new ideas have ‘permission’ and support to do so. This will allow for other schools to move closer to the radical innovation end of the continuum in supported ways. The implication is that schools that are seen as being innovative should receive extra support via funding and staffing to act as examples of excellence and that the Ministry of Education should actively support them.

#### *Suggestions for future research*

Future research in the area of innovation in education would be useful in two main areas. The first of these relates to further research within the schools themselves and the second to the New Zealand setting.

An ongoing study of the directors would provide useful insight regarding how their views change over time, especially as the establishment phase of the two school draws to an end. This could be extended to include the viewpoints of the other senior managers within the schools in order to provide a wider range of opinions. In terms of innovation in the schools and whether they are successful, further research could be developed in the collection of learning stories from students and staff outlining their views. Other researchers are involved in the school on a regular basis exploring aspects of learning within the school, from the perspectives of the students and community. Comparing these findings with those of this study would provide a range of new questions to be explored.

Within the wider New Zealand setting it would be useful to replicate the study in other new schools – ones that were not of special character; and also with some principals from

established schools which were seen as being innovative. A comparison with the findings from my research would provide further insight into the ability of schools to be innovative and the role of the leader in this process.

## **Conclusion**

This study set out to explore innovation in education through the eyes of the directors of two 'designated character schools. The literature review examined both a linear and an organic view of innovation. Through the concept maps and interviews it was clear that the thinking undertaken by the participants was organic, growing and changing, messy and non-linear, and that each participant had different views of innovation. Within these different viewpoints however, there were common threads between participants, identified as theoretical propositions. These key propositions related to roles of people as drivers or inhibitors of innovation; the major role of students in learning and the individualisation and choice involved in their learning programmes; the role of school culture in allowing or encouraging innovation; the whole notion of what counts as learning and how this might be measured in non-traditional ways; and the structures and systems needed to consolidate innovation. These findings are consistent with other research into barriers and drivers of innovation (Clarke & Christie, 1997; Cuban, 1988; Gilbertson *et al*, 2001).

The role of ICTs in innovating was identified in the research, Its strong relationship with student learning was evident and confirmed the place of ICTs as a transformative tool (Russell & Finger, 2004) rather than a stand alone factor in driving change. This, coupled with the wish to be creating new ideas 'from the roots' suggests that these schools are working towards the more radical end of the innovation continuum, as outlined in Figure 7, page 41.

While individuals and schools can try to innovate, there is a growing need for the policy makers to find new ways of supporting more radical approaches through resourcing, minimisation of compliance and taking an active interest in schools that are trying to innovate at the more radical end of the innovation continuum. In order to improve policy for innovation in education there is a need to create macro changes that are long term in nature, and that allow for sustainability. This includes more funding for research and development in the area of innovation from a progressive, chaos theory viewpoint rather than a deficit model or imposed viewpoint.

The research has highlighted the difficulties of innovating in education, especially for those who are trying to be radically different when compared to a factory model of education. Innovation can be a lonely job. It is complex and requires courage and perseverance.

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# APPENDICES

## Appendix 1: Innovation and Best Practice Project (IBPP) research summary

Innovation in schools best happens when:

Teachers	Schools	Policy makers
Are flexible	Enable teachers to be flexible	Constructively require schools to demonstrate how innovations improve student achievement
Continuously learn and develop	Effective leadership is provided and developed in all	Provide support to schools to innovate
Read, research and take part in substantive dialogue about pedagogy	Provide professional development opportunities which allow professional learning, new knowledge, pedagogy	Recognise and develop the work of accomplished teachers and principals
Are emotionally intelligent and recognise the strength of diversity	Create collaborative communities with other schools, educators and/or businesses	Create links between business and education so both can benefit – locally, nationally and globally
Recognise the non-linear nature of schools	Recognise the complexity of schools and provide infrastructure that supports this	Create structures of funding and organisation that allow for sustainability of an innovation
Have an in-depth knowledge of curriculum and can integrate learning to be authentic	Create a school environment which provides authentic links, integration and higher order thinking skills	Provide curriculum requirements that are futures focused and integrated
Take calculated risks and learn from their mistakes	Allow freedom for experimentation (within guidelines)	Create systems which are not test driven or focused on linear outcomes
Understand innovation and entrepreneurship and have an open mind to new ideas	Understand change management and the concept of innovation as a part of the organisation rather than a 'subject'	Involve schools in innovation, rather than imposing change

Cuttance, P. and the Innovation and Best Practice Consortium. (2001). *School innovation: Pathway to the knowledge society*. University of Melbourne: Center for Applied Educational Research.

## Appendix 2: Ethical Considerations

### Griffith Letterhead

#### What can we learn about radical innovation in education from the directors of two 'special designated character' schools?

##### INFORMATION SHEET

**Who is conducting the research** Name(s): Cheryl Doig  
School(s) / Centre(s): School of Education and Professional Studies  
(GU Ref No: CLS/16/04/HREC)  
Contact Phone: 351 9788 or 021 319 634  
Contact Email: c.doig@xtra.co.nz

##### Why is the research being conducted?

This research is being undertaken by Cheryl Doig as part of her doctoral studies through Griffith University, Gold Coast campus, Brisbane. She will be completing a case study of the directors of Unlimited Paenga Tawhiti and Discovery 1 schools, during June – November 2004. This will then be written up in the form of a dissertation and submitted to Griffith University Academic Board in approximately March 2005.

The purpose of this study is to look at innovation within the two schools, from the point of view of the directors. The initial research questions are as follows:

- What do the directors see as radical innovation in these schools; and
- How is ICT implicated in the use of innovation in schools?"

##### What you will be asked to do

To answer these questions the researcher will be adopting the following procedures:

- Initial meeting as a group to finalise research questions – these will be co-constructed
- Concept mapping exercise undertaken individually
- Semi-structured interview with each of the directors. With permission, interviews will be taped, then transcribed and returned to participants for verification. Participants may add ideas, ask for some comments to be removed, and/or agree that the transcription is correct.
- A focus group activity to discuss findings and make final comments

##### The basis by which participants will be selected or screened

Participants were selected because of their involvement as directors at the two special designated character schools being studied.

##### The expected benefits of the research

This research aims to provide information regarding the nature of innovation in education and discuss how the directors of two special designated character schools have coped with the challenge of innovation. The research will add to the literature on innovation in education and provide valuable information about change management in the New Zealand educational setting. The resulting research will be of use to policy makers and those holding management positions in schools.

##### Risks to you

Since the schools used in this study are easily identified, the directors will be fully involved in discussion of the final material for presentation and no material will be included without their permission.

In the event that the study produces information which may be sensitive to the individual or to the particular school the researcher will work with the participant to ensure that they mutually agree on a way forward. Protocols for this will be discussed openly at the initial meeting and any procedures developed as a result.

##### Your confidentiality

Data collected through recording of interviews will be kept until participants have reviewed and approved the transcription, at which point the tapes will be erased. No names will be used in the research and participants will have access to the draft findings to check that they are happy with the confidentiality of the documentation. Any information collected through the interview will be confidential to the interviewer and participant. It will not be used for any other purpose than as part of this research.

##### Your participation is voluntary

As a member of the NZ Learning Discovery Trust, and having served on the Establishment Boards of both schools, I am known to all Directors and have a positive relationship with them. The Directors have already given verbal agreement to be part of this study, however if my involvement in the schools affects willingness to participate in this study directors are able to refuse to be part of the study. Directors may withdraw from this study at any time without prejudice.

##### Questions / further information

If you require any further information you can contact the researcher, Cheryl Doig. Her contact details are located at the beginning of this Information Sheet. You may also contact the supervisors of this research, at the Gold Coast campus of Griffith University (as per letterhead):

- Doctor Glenn Finger – principal supervisor
- Professor Neil Dempster – associate supervisor

##### The ethical conduct of this research

This project has received ethical approval from the Griffith University Ethics Committee and complies with the laws of the State of Queensland.

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Research Involving Humans*. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Manager, Research Ethics on 3875 5585 or [research-ethics@griffith.edu.au](mailto:research-ethics@griffith.edu.au).

**Feedback to you**

As part of the research model, participants will have ongoing discussion with the researcher. Once initial findings have been developed the participants will have the opportunity to provide feedback through a focus group meeting.

The overall results of this study will be made available to the schools at the conclusion of the study. Directors will be given a full copy of the dissertation, where this is desired.

**Privacy Statement**

The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University's Privacy Plan at [www.gu.edu.au/ua/aa/vc/pp](http://www.gu.edu.au/ua/aa/vc/pp) or telephone (07) 3875 5585.

*Subjects will be given a copy of this information sheet, and a statement of informed consent to keep.*

**Griffith Letterhead**

**What can we learn about radical innovation in education from the directors of two 'special designated character' schools?**

CONSENT FORM

Research Team Name(s): Cheryl Doig  
School(s) / Centre(s): School of Education and Professional Studies  
(GU Ref No: CLS/16/04/HREC) Contact Phone: 351 9788 or 021 319 634  
Contact Email: [c.doig@xtra.co.nz](mailto:c.doig@xtra.co.nz)

By signing below, I confirm that I have read and understood the information package and in particular have noted that:

- I understand that my involvement in this research will include an initial group meeting, a concept mapping exercise, an interview and a focus group meeting, over a period of six months;
- I have had any questions answered to my satisfaction;
- I understand the risks involved;
- I understand that there will be no direct benefit to me from my participation in this research;
- I understand that my participation in this research is voluntary;
- I understand that if I have any additional questions I can contact the research team;
- I understand that I am free to withdraw at any time, without comment or penalty;
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3875 5585 (or [research-ethics@griffith.edu.au](mailto:research-ethics@griffith.edu.au)) if I have any concerns about the ethical conduct of the project; and
- I agree to participate in the project.

Name: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature of Board Chair (indicating approval for this research) \_\_\_\_\_ Date: \_\_\_\_\_

### Appendix 3: Coding definitions

Board of Trustees	The role the Board plays in encouraging or hampering innovation
Choice	Ability to choose pathways and have flexibility and freedom -in time, topic, where
Communication	Includes the way people are consulted and part of the processes
Coping with change	How people cope with change and the challenges this presents
Current system not meeting needs	Experiences in traditional schools has been negative.
Directors role	How directors perceive their role and how they think others perceive them
Driven by student interests	How the schools try to use student interest and why they do this
Entrepreneurship	How entrepreneurship is fostered in the schools
External influence	Role of other groups as key influencers eg Ministry of Education, Education Review Office
Future	Equipping for future needs???
Holistic approach	Role of student, learning adviser and parents in developing learning
ICT as a motivator	ICTs motivating learning for all children, but some in particular
ICT availability	Pluses and minuses of having ICTs readily available for students to use
ICT changing the way we learn	How ICTs are used to help students learn in new ways
ICT for communication	What ICT tools are used to communicate and how are they used
ICT for individualised learning	Students can organise their own learning for when they want and where they want.
Individual needs of students	Why individual needs are important and how they are met
Innovative people	General characteristics that innovative adults have and their influence on the schools
Interest in research	Role of research in the community
International	NZ compared with other places

Keep good things from past	Keep the best of what is known, don't throw the baby out with the bathwater
Learning Discovery Trust	Learning Discovery Trust
Learning from mistakes	Trial and error, reflecting and changing
Measuring success	Assessment
Motivation to learn	Includes learning from one another rather than directed
Not all change good	See keep good things
Organic growth	Changes and unfolds over time
Ownership	People having a role in making decisions through consultation
Packaging of learning	The way curriculum and learning are put together
Partnerships	Developing partnerships with businesses and mentors in the community
Philosophy	The beliefs that underpin the school and how they may be different from other schools
Physical environment	The physical structure and design of spaces and the location of the schools
Power sharing	Who makes the decision and what role do others play in this
Professional development of staff	How staff are developed in the schools
Qualifications	The role of qualifications in learning at these schools
Radical Innovation	Towards a definition of radical innovation and how this might look in schools
Relationships	Including the sharing of power
Resourcing	How resources are used and the implications of resourcing these schools
Risk taking	Things that were tried which were risky and may or may not have worked
Role of NCEA	What part NCEA plays in the schools
Role of parents	The differences, strengths and challenges of parental involvement in the school

Role of the teacher	What do the advisers do in this environment?
School Culture	How school culture was established and what it looks like
Sharing success with others	Role of the schools in sharing what has been learnt
Size of school	Dealing with growth from start up and how this is managed
Special character	How the special character has developed and the role it plays
Specialist v generalist	How the curriculum is delivered
Stress and workload	Stresses of the job and special features of this in these schools
Student readiness	The capacity of students to be ready for this sort of learning environment
Students are happy	Students think school is fun and are happy there
Systems to support and sustain	Structures and systems that have been put in place to facilitate learning
Timetabling	The putting in of structure and timetabling
Traditional schools innovate too	Traditional schools look for opportunity to innovate and change
Universals	Things that are taken as being true in terms of student learning
What constitutes learning	What the directors struggle with as they move from a traditional to progressive model of learning
Why students come to the schools	Are they driven by students or by parent interests?

## **Appendix 4: Notes from Peer Meeting**

September 13 2004

The next stage was to contact two colleagues to critically analyse my coding. Both these colleagues had doctorates and were in senior positions in two tertiary institutions. These colleagues came together with me over a two and a half hour period and critically analysed my work. During this session we did the following:

- discussed the underlying ideas behind the research
- discussed how I had developed the codes and emerging categories
- went through interview 1 to check coding – did they agree with my codes. Used P1 as a discussion point regarding verification of concept mapping, interviews techniques and initial findings

Working with two colleagues was an amazing experience – they acted as a filter for my thinking, a sounding board and as critical friends. This was so useful, but it did send me back to the drawing board. It verified for me that I need to go back to my data and get immersed in it, to ‘get into the heads’ of the participants. Things we discussed:

When I coded material I collated the number of codes for each category, but then treated these codes as equal and included them in my grouping whether there were 2 responses or 22. It was suggested that as I continue categorising, that I take ones with few mentions out of the system. If it something that I am surprised isn't mentioned more often eg professional development of staff (2) I should comment on this and ask the question about how innovation is going to happen in a systematic way if pd is not a feature. It may be that I go back to the individuals/group for more discussion on this.

We discussed the frequency of some of the codes eg radical innovation and the fact that this was a prompted question, therefore likely to get more feedback. I probably need to mention this in my write up. One of my colleagues also suggested that the radical innovation heading be divided into two parts – positive and negative (+ri and -ri). They suggested this because in the past many of the progressive schools failed because they focused on the negatives (if we're not doing this then we will be being innovative). See example on page 3 in between role of the teacher and packaging of learning. I'll go back over the radical innovation codes to see whether this is a feature or not before proceeding.

While the two agreed with my coding there was some comment regarding where coding begins and ends. In some cases they thought I had coded continuations of the same idea as separate examples of the same thing, thus increasing the frequency of the code. They believed that I should only re-code in the same block when the idea was substantially different. If the same idea was repeated later in the interview it would be counted because it was a separate utterance of the idea, indicating that the participant thought this was important. An example is p12 where I have ICT for individualised learning within the same area – these should be collapsed. This will affect my code frequencies so I now need to spend time getting it right.

When the coding results are broken up into groups there can be considerable discrepancy between participants, with some mentioning one aspect a lot and others not at all. This needs to be commented on and individuals tracked, as well as coming up with general findings. To do this we decided that it would be best to have a chapter dedicated to each participant as a separate case, before drawing the whole synthesis together. We discussed providing a description of the four participants but I think to do this would be reducing anonymity.

When looking at the participants individually I could look closely at the concept map then interview data to see whether they are similar, whether there are some aspects of the concept map not covered, or some new things that they didn't mention in the mind map. If I haven't asked the question does this mean it's not important to them? There may be things from this closer analysis that I want to follow up with individual participants. In terms of concept map v interview it would also be useful to look at the ratio of codes from map to interview.

In relation to my initial clustering of ideas the first grouping was seen as being about the macro sociocultural features that have contributed to the schools' existence. This fits in with my comments on driving forces and may be a good starting point for my synthesis. As the categories develop further they could be clustered into concept map type arrangements where items are presented more in a hierarchical manner so that the key features are clear. I will probably do this in Inspiration and HyperResearch is quite limited in this regard.

As I proceed with clustering I know I will come up with some big ideas, but I also need to look at what's left out. There may be some of these items that I want to comment on. Right now I am going back to my material and codings. I will look at possibly creating fewer frequencies to focus on the big ideas.

I've made a note that I may want to check up with Graham Nuttall's research when I am looking at the cluster of ideas around *What constitutes learning*. There was interesting discussion about the term re-packaging learning, that came from several participants. The comment was made that this is a new term, not one that was used in the 70s. We went back and had a look at what the people described as repackaging – good debate. I need to look more at the language eg words like curriculum delivery etc – are there anomalies?

I also need to make sure I explain which questions came out of the co-construction meeting. I think I have done this but a note to myself to check.

As I proceed further with thinking, I want to look more closely at which of the emerging findings would I expect to see in any school and what seems to be unique to these schools. I may need to go back to participants, but I can also include some document analysis and participant observation because I am in and out of the schools. I need to write these into my study.

All this should help me to frame up how I will organise my last focus group. One idea that came up from one of my colleagues was to include a structured part to the focus group, where I highlight several topics where there were big differences in the group and ask them each to speak on it (give a bit of a definition), starting with those who had made no comments on that particular theme and working up. This would ensure that all got a say. Worth considering – will think about it further as I get immersed in my data.

## **Appendix 5: Organisation of Focus Group**

### **Organisation of Focus Group**

Prior to the meeting send email confirming date, time and venue. Also a copy of their individual information in Chapter Four. Explain the purpose of the meeting and programme.

#### **Programme**

##### 3.50 Refreshments

- 4.00 Start by going over the questions posed at the beginning of the research.
- Any questions or comments based on their own section
- Summary of main findings then feedback from the group
- Key questions re things want to check - role of professional development, could you be innovative without ICTs, what role leadership (yours and others).
- Is what you are doing any different?
- Sustainability
- What counts as learning
- Rank greatest barriers and drivers.

All this should help me to frame up how I will organise my last focus group. One idea that came up from one of my colleagues was to include a structured part to the focus group, where I highlight several topics where there were big differences in the group and ask them each to speak on it (give a bit of a definition), starting with those who had made no comments on that particular theme and working up. This would ensure that all got a say. Worth considering – will think about it further as I get immersed in my data.