Innovative Learning Environments as agents of teaching and learning

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ABSTRACT

New Zealand education is in a period of unprecedented change. No greater tangible evidence of this change is the introduction of Innovative Learning Environments (ILE). The ILE is a new phenomenon in the spatialisation of educational spaces being championed by the New Zealand Ministry of Education. The design of the ILE has had an immediate impact on the everyday practice of teaching and learning, especially in the secondary school context. The newly-configured spatial typology (non-discursive space) is a significant departure from the traditional cellular transmission model of education where the majority of teachers develop their core pedagogy (discursive space). In the past ten years several new schools have been designed, built and occupied that reflect open flexible spaces in contrast to the tightly ordered typology of traditional cellular classrooms. It appears that design communities are driving this environmental change while those in educational fields have been more reactive than active as change agents. This points to a misalignment between the discursive spaces of ILEs that address curriculum change and pedagogy, and the non-discursive spaces of ILE, with their design-driven agendas. To critically engage with this topic 'Innovative Learning Environments as agents of Teaching and Learning', I aim to bring into discussion architects who design facilities, and educationalists and students who occupy them. Developing an awareness of the experiences of those who occupy the spaces is fundamental to understanding individual and group encounters, but emphasis must also be positioned on the nature of space itself as space is socially constructed and produced through the actions of its participants. Thus, by addressing the issue of spatial ontology, a discourse can be generated that will help to create an enhanced understanding of this relational space of design and occupancy.

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CHAPTER ONE

Innovations & Agencies

OVERVIEW

The field of education in the late 1990s was marked by discourses that emphasised innovation and change concerning the future design of educational environments for twenty-first century learning. Emphasis was given to a fast-changing world where rapidly evolving developments in global connectivity enabled by the Internet altered the nature of living, working, socialising, and doing business (Bull & Gilbert, 2012; Pink, 2005; Wagner, 2008). Processes of educating and being educated became a contentious topic for global educational discourses (Bull & Gilbert, 2012). Literature from the Organisation for Economic Co-operation and Development Education Directorate (OECDED) maintained that these technologies did not just become tools of learning, but also highly sophisticated ways of networking and knowledge sharing, as well as vehicles for innovation and entrepreneurship. They argued that with such rapid changes, producing *more of the same* knowledge and skills would not suffice to address challenges of the future. Other theorists (Bull & Gilbert, 2012; Dwight & Garrison, 2003; OECD, 2006; Pink, 2005; Wagner, 2008) supported this view, emphasising that education must be more about identifying the most effective learning environments and conditions which promote creative skills development in young people. The notion of 'creative skills' acknowledges that such skills have both cognitive and practical outcomes and involve creative and critical approaches to problem solving (Williamson, 2011), creative thinking (Torrance, 1977), creative learning (Jeffrey, 2006), possibility thinking (Craft, 2000) and analytical decision making, so important for economic and social progress.

Despite attempts to change the design of predominantly primary and intermediate schools to open-plan learning environments in the late 1960s, environmental design for secondary schooling up to the 1990s maintained a rigid acceptance of cellular classroom design specification. Such schools reflected traditional 'silo' educational approaches. Manageable components were within narrow disciplines and commensurate knowledge content, spatially inscribed in cellular classroom configuration (Benade, 2017a; 2017b; Lackney, 2007; Nair, 2002). The OECD emphasised that in a highly sophisticated technological world, spending our lives within narrow discipline boundaries, inhibits the development of imaginative capacities to invent our futures, and to anticipate where the next invention and source of economic value, will happen. They argued that education for this world of twenty-first century learning demands open-mindedness, ability to make connections

between ideas that previously seemed unrelated and ability to become familiar with knowledge in disparate fields (OECD, 2006).

Influenced by OECD pronouncements on the future of education and its facilities, in 2007 the New Zealand Ministry of Education (MOE) significantly revised the New Zealand Curriculum (Ministry of Education, 2007). This, combined with population growth, led to the MOE building a series of new schools, designed as Modern Learning Environments (now termed Innovative Learning Environments, ILEs). Architects involved in this process faced major challenges when designing educational environments that reflected the needs of twenty-first century learning. As described in the New Zealand Curriculum, education was—and still is—in a period of one of its most significant innovations. Agents of educational change, both human and non-human, include teachers, students, architects, facilities, technologies, the institution of the MOE and its commissioning processes for educational design. These are all susceptible to the volatility of identity change, misalignment, inertia and resistance to innovation, as well as the potential for significantly new understandings of the site of learning. The situation as just described gave rise to this research question: **Do Innovative Learning Environments (ILE) constitute an agency for teaching and learning?** Subsequently a key aim of this thesis was to investigate a number of these agents of change, and this study focussed specifically on the context of the design and occupation of two innovative secondary schools in Auckland.

Such changes signal a philosophical divergence from earlier models of schooling (Benade, 2017a; 2017b; Bradbeer et al., 2017; Saltmarsh, Chapman, Randell-Moon, Campbell, Drew, 2015; Imms, 2016). They have not only altered the design of learning environments but, contentiously, challenged the agencies of teaching and pedagogy (Benade, 2017a). In the past ten years in Auckland, several secondary schools have been designed, built and occupied, engaging spatial configurations more suited to innovative approach to learning. Since their implementation, ILEs have not encountered rigorous examination of their design, function and purpose. Although their design references international facilities approaches, their context in New Zealand education needs to be critically appraised.

This study draws on theoretical and empirical inquiry into two kinds of practice, practices of designing environments for twenty-first century learning, and practices of teaching for learning within these environments. The study develops its depth and perspective though a literature review that organises its enquiry on the basis of the discursive—critical

understandings of the field developed textually or discursively. Literature also concerns the non-discursive, considering built infrastructures as spatial configurations and technologies. There is a third 'category' to the literature, that of spatial ontology, considering spatiality as something other than measurable extension, thinking space as lived experience. Crucially, depth of research is achieved through empirical study of participants—architects, teachers and students—through analysis of interviews and focus groups. Data has been critically analysed and compared such that findings might inform educational environmental designers to improve new and existing facilities. The findings may also be valuable for educational professionals and students in ILEs, along with the communities for which these schools are designed. The study includes perspectives of architects, enquiring into their practices of designing ILEs. It also presents the perspectives of students, teachers, and leaders using ILEs as sites of teaching and learning.

AIMS OF THE THESIS

> With all research traditions, there is no one way of doing research.
> (Ellis & Barkhuizen, 2005, p. 9)

In defining the aims of this thesis, I have located five key concerns indicative of both the extent of research and its limits or limitations: To *examine* Innovative Learning Environments (ILEs) as agents of teaching and learning; *analyse* architects' design process for ILEs in meeting expectations of the Ministry of Education (MOE) to innovate school design; *analyse* teacher and student responses to ILEs as educational innovation; *analyse* practices of spatial design and teaching practices to bring into view congruence and lack of congruence in designing *and* inhabiting ILEs; and lastly *analyse* agential frameworks of teaching and learning as dimensions of spatial ontology in the production and utilisation of ILEs.

The first and in the most general sense, the research **aimed to *examine* ILEs as agents of teaching and learning.** The notion of 'agency' is used in a non-technical sense in this research. By non-technical, I mean that the thesis does not engage with theories of agency. Rather the term is used in the sense of considering entities or persons whose role is that of performing relations *between*. Architects perform design innovations between MOE briefs and school infrastructure realisations. Teachers perform frameworks from learning between curricula and student bodies. In this sense, agents are relational performatives. Current agency theory, in a more technical sense, falls predominantly into three kinds of

arenas. The first is in the field of economic theory, concerning the role of financial agents with respect to moral hazard risk. The second is associated with the work of Bruno Latour, under the title, Actor Network Theory, that defines the roles of human and non-human actants. The third is associated with the work of the philosopher, Levi Bryant, under the rubric of Onticology. While aspects of all three fields may have been engaging, this study limited itself to notions of agency that were not partial to any of these.

As aims for the research, there follows four moments of analysis, comprising the defining of four key agents to the innovation of ILEs. The first *analyses* architects' design process for ILEs in meeting expectations of the Ministry of Education (MOE) to innovate school design. The second *analyses* teacher responses to ILEs as educational innovation. The third *analyses* practices of spatial design and teaching practices to bring into view congruence and lack of congruence in designing *and* inhabiting ILEs. And the fourth *analyses* agential frameworks of teaching and learning as dimensions of spatial ontology in the production and utilisation of ILEs. Spatial ontology brings into view another dimension for analysing spatial characteristics as an explanation of the features of social causality in ILEs. Its concerns — that space is practiced before it is measures and known — add relevance to social aspects of social phenomena explained through spatial characteristics exposed through the opening and occupation of places for activity that automatically occurs whenever there is human life. This approach identifies new objects for research and offers a novel conception of the justification and construction of spatial explanations in the occupation of ILEs.

To achieve this, I have to explored the working nature of two secondary schools in Auckland designed as ILEs and evaluated the relations that exist between the designed environments and the teaching and learning practices within these environments. The research focuses on two key aspects, firstly, the educational and environmental intention of the school designers and, secondly, the educational intention and practice of teachers to fit with these environments to benefit twenty-first century learners. The design of these environments appear to have been developed with new learning approaches in mind as they offer flexible open spaces, ideal for cross disciplinary and collaborative learning.

From my experience as a teacher, graduate teacher educator and as a principal, the prospect of staffing an ILE is a difficult task. Exploring these relations between designer-leader-teacher-student requires a passionate commitment to the field and an initial disposition for me was to be a person with empathy and understanding of all participant

roles inherent in the study. Research that aims to express lived experiences, participant narratives and constructivist approaches, informed by critical theory, appears to be the best fit within this context, especially with my educational experience and design background bridging the cultures of school teaching and environmental designing (Fisher, 2005). All researchers draw on their existing interpretive perspectives. As a PhD student, I have an obligation to make sense of what I hear, see and discuss, and report this in appropriate, measured and academic discourse. My deepest consideration lies in accurately narrating 'stories' from both designers and educationists and I intended to convey these views with the passion I have for the practices of both disciplines. I have cultural connections with each group and wish to accurately project the voices of participants to witness their experiences and perspectives.

SIGNIFICANCE OF THE STUDY

The MOE's initiative to design and build new secondary schools as ILEs has altered the pre-existing secondary school education paradigm. The creation of open-plan and interconnected spaces that demand a very different pedagogic approach has appeared to expose an underprepared teaching profession and challenged learning communities with respect to their preconceived notion of programmes of learning. Initiatives to alter the design of secondary schools appear to be spatial responses for the need to transform the vision and purpose of education to meet the demands of twenty-first century learners. This vision and purpose is clearly stated in the New Zealand Curriculum (Ministry of Education, 2007), but questions remain about the speed and conviction with which secondary school teachers, leaders and teacher training providers have transformed their vision and practice for developing twenty-first century pedagogy and programmes of learning. This has led to a complex situation where already commissioned and occupied ILEs exist with a lack of an adequately prepared workforce, under-informed communities and over-extended leaders who are not ready for such radical environmental changes.

International research on ILEs has focused on environment performance measures that have been used to determine learning environment effectiveness (Bingler, 1995; Blackmore, Bateman, Loughlin, O'Mara, & Aranda, 2011; Greenman, 1998; McGuffy, 1982; Moore & Lackney, 1993; Nair, 2002; 2005; Nair & Fielding, 2005; Tanner, 2000; Washor, 2003; Wolff, 2002; Woodhill & van Vliet, 1985; Woolner, Carter, Wall, & Higgins, 2012). More recently these have evolved to attempt to relate pedagogy—including student and teacher attitudes—to space (Cleveland, 2017; Cleveland, & Fisher, 2014; Imms,

2016; Saltmarsh, et al., 2015). Even though these research projects concerning relations between pedagogy and learning environments continue to be developed, the more important differences between examining pre-existing pedagogy and twenty-first century pedagogy appear to have been bypassed, leading to research outcomes that appear to only relate building performance scores or how people are responding to such spaces (Benade, 2017b; Bingler, 1995; Blackmore, et al., 2011). Pedagogy and learning programme design that reflect the development of students' twenty-first century skills and aptitudes are considerably different to pre-existing teaching practice (Benade, 2017a; Bull & Gilbert, 2011; Burns, 1995; Dickinson, 2013; Brown, Duguid & Collins, 1989; Dwight & Garrison, 2003; Giroux, 1989; Lave & Wenger, 1991; Lombardi, 2007; Pink, 2005; Rosen, 2007; Stone, 2007; Wagner, 2007). If there is ever to be a common language between designers and occupants (educationists, students and the community), then there needs to be critical examination of the relations between agency and innovation that exist within current curriculum objectives, teaching approaches, graduate teacher preparation and architectural intentions of ILE design (Bradbeer, et al., 2017; Cleveland, & Fisher, 2014; Imms, 2016).

There are seven arenas of significance that emerge from this study. At the time I commenced this study, ILEs in the New Zealand context had almost no rigorous investigation as to their relevance for education innovation. This study set out to redress this. Notwithstanding a lack of critical study, the MOE Property Division was advocating for the development of ILEs with very little research on implementation to support its initiatives. This study aims to evaluate the MOE's role in school commissioning and design in order to assess the potential for improved processes. The little extant research that had been done revealed contradictory views concerning ILEs as agents of teaching and learning. There appeared to be misalignments between architects' understandings and teacher experiences. This research tended to be anecdotal rather than rigorous. This study set out to ascertain arenas of alignment and misalignment.

The research therefore brings into comparative perspective, understandings brought to the innovation of flexible learning spaces by designers, and perspectives brought by those who inhabit those spaces. The research also develops a spatial ontology in order to reveal pre-structures to spatial understandings for both designers and users of ILEs. In doing so, the research offers the potential for original contributions to the fields of spatial design, pedagogy, curriculum, and teaching and learning in contexts of national and international research in ILEs. The research achieves this in developing a qualitative empirical study with

a phenomenological engagement with spatial ontology. Together, these bring into view an horizon for understanding the agential disclosure of spatiality for teaching and learning. Such agency is neither an empirical measure of spatial configuration nor an observed objectivity of teaching practice. It discloses a 'being' of teaching's situatedness.

RATIONALE

In the last ten years, the design of New Zealand secondary schools has changed significantly in an effort to move away from the industrial model cellular classroom configuration of the past to a twenty-first century learning model for the future (Ministry of Education, 2011). Design approaches to ILE innovation send an overt signal to the community about the importance and difference inherent in twenty-first century learning with its open, flexible and interactive design offering opportunities for a variety of teaching and learning approaches. These changes reflect new understandings about philosophies of learning and follow international trends to radically redesign secondary schooling.

With a rapidly growing body of literature arguing that school environmental design has an impact on teaching and learning (Benade, 2015, 2017b; Bingler, 1995; Bradbeer, et al., 2017; Byers, Imms & Hartnell-Young, 2014; Saltmarsh, et al., 2015; Cleveland & Fisher, 2014; Dovey & Fisher, 2014; Fisher, 2005; Greenman, 1998; McGuffy, 1982; More & Lackney, 1993; Nair, 2002; Nair & fielding, 2005; Tanner, 2000; Washor, 2003; Weinstein, 1979; Wolff, 2002; Woodhill & van Vliet, 1985; Woolner, et al., 2012), there is a need to critically reflect on the performance of ILEs as to suitability and function for facilitating innovative teaching and learning. Although the above studies indicate, via thorough investigation, that school buildings impact teaching and learning, there are limited international findings concerning the secondary school model of ILE innovation and pedagogic performance aimed for in twenty-first century learning. Fisher (2005) agrees: "There is insufficient qualitative, deep research on the relationship between pedagogy and design of learning environments," (p 3).

ILEs emerged from international, particularly OECD, research on the relevance of current education in a rapidly changing world and a need for more schools. With exponential growth of technological developments influencing the ways people socialise, work and live, there is a realisation that the ways education has been experienced becomes a focus of concern for future-focused educational theorists (Bull & Gilbert, 2011; Burns, 1995; Dickinson, 2013; Brown, Duguid & Collins, 1989; Dwight & Garrison, 2003; Giroux, 1989;

Lave & Wenger, 1991; Lombardi, 2007; Pink, 2005; Rosen, 2007; Stone, 2007; Wagner, 2007).

In the early 2000s and with a groundswell of emerging understanding of global changes, the MOE was faced with growing demands for new secondary schools. Wanting to improve school performances for implementing new programmes of learning, the MOE's Property Management Division extended an opportunity for designers to innovate and develop new ideas for school designs. These initiatives manifested spatial configurations aimed at being a catalyst for reimagining how education and being educated are practiced and experienced. Since the development of the two schools involved in this research, the MOE has created the New Zealand School Property Strategy 2011-2021 (MOE, 2011) setting a vision for the school property portfolio. Within this document lies strong recognition that school environments influence student learning and teaching practices and that raising the standard of school environments will support educational achievement.

The research proceeds with a rationale that sets out to engage deeply with the identified agents of innovation in educational facilities. Thus, the research establishes an empirical qualitative research study of two recently completed ILEs in Auckland with participants including design architects for the ILEs, leading teachers and teaching staff and students from each of the ILEs. It advances via semi-structured interviews with two architects, each responsible for one of the ILEs. Interpretative analysis of findings is discussed in relation to key international literature in the field on the design of ILEs and MOE documents on polity and processes of ILE development. Semi-structured interviews were held with school executive members and key teaching staff, while focus groups were held with student cohorts from each of the ILEs. Interpretative analysis of findings occurs in relation to key international literature in the field on innovative practices of teaching and learning in ILEs and MOE documents, including twenty-first century curriculum documents. There follows critical comparative analysis of findings from architects and school users as to expectations of innovative spatial practices and innovative teaching and learning practices. In a further moment of engagement, the notion of agency is critically addressed through the development of a spatial ontology as disclosive of the practices of space developed differentially by architects, teaching staff and students.

OVERVIEW OF RESEARCH APPROACHES

> Research is a situated interpretive activity that locates the researcher in the world. (Kinsella, 2006, p. 14)

Research methods that support the gathering of data from participants have to demonstrate empathy with the dynamics of their complex environment. It was important that these methods offered potential to emphasise narrative, discovery, and meaning of participant experiences, rather than prediction, control and measurement, (Osborne, 2004). For this I adopted critical hermeneutics as it concerns the nature of human interpretations and understandings. Kinsella (2006) claims "hermeneutics acknowledges that all interpretation is situated, located, a view from somewhere" (p. 8). Gardiner (1992) summarised the active role of the interpreter in critical hermeneutic interpretation:

> The hermeneutic approach stresses the creative interpretation of words and texts and the active role-played by the knower. The goal is not objective explanation or neutral description, but rather a sympathetic engagement with the author of a text, utterance or action and the wider socio-cultural context within which these phenomena occur. (p. 63)

The place of interpretation in hermeneutic processes means language is significant (Kinsella, 2006; Ramberg & Gjesdal 2009) especially when interpreting the dialogue used by the different disciplines of practice (architects and educationists) involved in the development of ILEs. Research findings are always dependent on the context of the research study, as well as me the researcher, (Kinsella, 2006; Roberge, 2011). Denzin and Lincoln (2000) viewed investigator and the investigated as interactively linked in the creation of findings within the process of interpretation and interaction between the investigator and the research participants. School design may lead to significant opportunities for enhanced educational experiences but, equally, may be detrimental to lived experiences within its own regime of power relations. Design implementation presents juxtapositions within power's exercise distributed between architects and educational practitioners, including the MOE, Boards of Trustees, and teachers who engage in the development of programmes of learning based on a national curriculum.

Michel Foucault (1980) deploys Friedrich Nietzsche's genealogical analysis of the development of morals as a starting point for developing a method that includes an examination of the complex power relations between institutional practices, bodies and systems of thought. Foucault's genealogical analytics redefine the problematic of power and mark a fundamental break with conventional theorisations. He held that power is fragile, weak or ineffective if its only function was to repress. Rather, power is productive and its distributions or capillary movements are recognised in our spatial practices. Hence, this research engages the ontology of spatiality that is equally a concern with power, knowledge and experiential selves. Such combining of power/knowledge and the embedding of reason diffuses through the social body producing what people are and what they can do, structuring the ways things are thought about, how people see themselves and others, and how they relate to their world around them. Foucault's work on space, knowledge and power is extended in the critical understandings of spatiality found in two other twentieth-century French philosophers: Henri Lefebvre's *The Production of Space* (1991) and Michel de Certeau's *Practices of Everyday Life* (1984). Though the writings of Foucault, Lefebvre and de Certeau are not collapsible into one, each brings a revelation to understandings of spatial ontology, highly relevant to this research into ILEs as agents of teaching and learning.

CHAPTER SUMMARIES

The following briefly describes each of the chapters that follow this introduction. It aims to succinctly provide a 'snapshot' of the thesis process, as the research unfolds from literature, to empirical findings, analysis and discussion. These chapter summaries introduce the thesis exposition of everyday encounters of space, power, and educational practices.

Chapter Two, "Discursive and Non-Discursive Spaces," introduces literature important for understanding recent developments in both pedagogical change and in approaches to the housing of schooling. This literature defines the non-discursive spatiality of innovative learning environments that constitutes an agency for educational change, and broadly defines the discursive spaces of pedagogy that range from critical and philosophical writings on education, to commentary on global changes in education, instigated by bodies such as the OECD. It also addresses New Zealand government documents and policies on twenty-first century learning. The chapter identifies current technological developments which suggest a need for change in educational approaches, recognising that architectural innovation *per se* fails to divulge the multiplicitous relationships that expose a deeper set of

interactions. Key literature on spatial ontology reveals that space is essentially a practice rather than a set of physical and measurable components. Recognition of this has the potential to influence practices of both architectural design and teaching and learning, in the future production of ILEs.

Chapter Three, "Research Methodology," develops the approaches to research methods undertaken in the thesis. If space is essentially practiced before it is known or made objective, then we require research methods that build inquiry for understanding practice as essential for critical analyses of ILEs. In this we need to understand the *experiences* of those whose practices become the object of enquiry: initially collecting evidence of people's experiences from two disciplinary milieu, architectural design and teaching and learning. The thesis centres on qualitative phenomenological hermeneutical research design to engage with and develop understandings of participant experiences. The chapter outlines the building of interpretive dialogue as a means of making sense of participants' social worlds, and discusses how data analysis will be strategically coded to elicit the points of view of participants.

Chapter Four, "The Architects," introduces the designers of the two ILE schools. In previous ILE research, little focus has been given to experiences of facilities designers. The architects' perspectives give insight into the actuality of facilities design and design processes, including consultative interactions with the key clients, the Ministry of Education (MOE) and the Establishment Board of Trustees (EBoT). These architects aimed to engage in a design process that was inclusive, wanting to build productive relationships with their clients. Traditionally, designers and educators have maintained their distance, with school design being the domain of the property management division of the MOE, who had rigid criteria for school and classroom planning. ILE development implied architectural freedom, a departure from traditional design constraints. Consequently, there were few established structures in place for cohesive relationships between the two disciplines. This chapter reflects the experiences of these architects as they undertake their design practices that inherently configure relations of space and power.

Chapter Five, "The Schools," introduces the school leaders, teachers, and students of the two ILEs. The design process, as discussed in chapter four, was managed by the MOE and EBoT. By including school participants in this study there is an opportunity to reveal the views, perspectives and experiences of those who are engaged in practices of teaching and

learning in those ILEs. Teaching and learning in a school where spatial configurations are a radical departure from traditional school design—where the majority of teachers gain their teaching expertise—implies rethinking approaches to securing and preparing staff, developing programmes of learning, structuring timetables, challenging and adapting traditional notions of teaching and learning such as ways of making the students central to the learning process, and managing students in open flexible spaces. This chapter provides details of the experiences of these leaders, teachers, and students, engaged in *everyday* practices of leading, teaching and learning, with revealing approaches to self-management through adaptations to ILE facilities.

Chapter Six, "Space & Pedagogy," critically engages with the two findings chapters and key literature, bringing the three concerns of the discursive, the non-discursive, and spatial ontology into conjunction with my empirical findings defined by key themes and sub-themes. This chapter develops a phenomenology of space, power, and agency in defining approaches to a spatial ontology. The ensuing discussion brings into relation experiences of designers and educators to reveal circumstances, contrasts, contradictions, and concerns with understanding spatial encounter in everyday practice, how these encounters are constitutive of a production of space. This discussion reveals potentials for tactics to reinvent, subvert, and re-contextualise the folds and refolding of physical and pedagogical space, in making sense of ILEs as agents of teaching and learning.

Chapter Seven, "Agencies of Change," locates the contributions of this study. The chapter returns to the critical themes of *space, power & agency,* outlines the contributions to knowledge, describes the thesis limitations, and offers perspectives on future research opportunities. This research reveals a potential, within ILEs, for the reordering of spatial codes, as understood or defined by relations of space and power. Agency is multiple, always in the plural. Agency invokes reflection on an everydayness that is not defined by the strategic discourses of experts, whether architectural, or pedagogical. This opens a tactical opportunity to refocus the very grounds of normalising education, to agencies better suited to twenty-first century teaching and learning. While a facility may be strategically defined as a school, its agencies for teaching and learning are tactics: determinable though multiplicitous and unconditioned.

This suggests positioning ILEs as planned sets of spatial potentials that offer multiplicitous experiences that, in themselves, are socially produced through tactics, subversions, and

their inhabitation. ILEs are not designed as devices of control or repression, though no doubt may become so. They are designed as enablers of freedom and opportunity, as a means of encouraging self-control, transforming relations of space and power, where productive capacities of learners, caught in a technologically bound world for learning democracy, are liberated.

CHAPTER TWO

Discursive & Non-Discursive Spaces

INTRODUCTION

> One of the most destructive habits of modern thought ... is that the moment of the present is considered in history as the break, the climax, the fulfilment, the return of the youth, etc. ... One must probably find the humility to admit that the time of one's own life is not the one-time, basic, revolutionary moment of history, from which everything begins and is completed. At the same time, humility is needed to say without solemnity that the present time is rather exciting and demands analysis. (Foucault, 1996, p. 359)

The work of Michel Foucault, along with other theorists of space and spatial practices, is important for this thesis. With this literature review chapter I am borrowing a key distinction made by Foucault in his early writings, the distinction between the discursive and the non-discursive. This distinction is most clearly drawn out in *The Archaeology of Knowledge,* a book on method developed by Foucault after he had written on the 'birth' of madness and the 'birth' of the clinic, events happening during the eighteenth century. By archaeology Foucault infers that knowledge is composed of strata or stratifications: Strata that are language-like—books, pamphlets, government reports, scientific studies and so on—and strata that are object-like or artifactual—machines, domestic goods, buildings, designed spaces and so on. Our knowing is composed of and practiced within the discursive and the non-discursive. What Foucault was especially concerned with was the question of how the discursive and non-discursive are practiced spatially. In other words, our forms of knowing are essentially spatially practiced. Hence, institutions (like schools) can be characterised by their discursive spaces (in policies, curricula, teacher-talk and so on), and their non-discursive spaces (the built environment, furnishings, technology). The latter, and other spatial arrangements, give life to programmes in the school, contributing to its overriding organisational culture. Of course, the two never work in isolation. The discursive and non-discursive are encountered in the everyday of those who work in schools as if their spatiality was undivided.

The current study concerns how the non-discursive spatiality of innovative learning environments constitutes an agency for educational change. The following literature review has three related intentions. First, to broadly canvas the discursive spaces of pedagogy. Pedagogy is inherently affected by technological advances that significantly influence conceptions of education. These conceptions have relevance to considering global and New

Zealand educational policy responses, and what these responses might mean for both classroom practice and, indeed, the design of the classroom. The second intention flows from the latter point, to consider non-discursive spaces, namely institutional sites housing pedagogical practices. It is important to re-emphasise that in the everyday encounter of settings of teaching and learning, these distinct spatialities (the institutional sites) are not obvious, but remain generally un-reflected by those engaged in teaching and learning. Equally un-reflected is what could be called the ontology of space, or how we might consider spatiality as something other than a container within which things exist or happen. Space is essentially practiced before it is known or made objective. Its knowing is produced by relations of power and hence there is an essential relation between space and power (Foucault, 1980). Thus, the third intention of this literature review is to take up more fully questions of space, power and practice in examining a range of theorists whose work has focused on the production of space.

DISCURSIVE SPACES

21st century learning

Within the context of this study, I use the term '21st century learning' as an indicator for all that relates to preparing students for life in the current and indeterminate century, including equipping learning environments to be vehicles or agents in this process. Furthermore, the use of the term signals divergence from traditional models of teaching and learning and the pressures to influence teachers' existing practices. This review attempts to capture the flavour of related research arising firstly, from the shift to a knowledge economy from an industrial economy (Brinkley, 2008; Bull & Gilbert, 2012; OECD, 2006; Wagner, 2008); secondly, from a renewed questioning of the relevance of current education provision and practices (Bereiter, 1992; Dwight & Garrison, 2003; Giroux, 1988; Sanoff, 2001; Schletchy, 2001; Senge, 1992; Wagner 2008; Washor, 2003; Wells, 2002; Woolner, 2010); and thirdly, from a change in learning theory and pedagogy in response to the digital revolution and demands of the knowledge economy (Beetham & Sharpe, 2013; Benade, 2014; 2015; Bull & Gilbert, 2012; Coppen, 2002).

Teaching for 21st century—or 21st century learning—are terms that are interpreted in a variety of ways: future focused, learning for the future, futures education, and lifelong learning (Beetham & Sharpe, 2013; Benade, 2017a; 2017b; Bull & Gilbert, 2012). Whichever term

is used by educational professionals, there appear to be similar perspectives about what it means: preparing students for a future that presents a very different life to what was known in the past; a future where accelerating innovations and technological advancements have changed the way people live, work and socialise (Pink, 2005). People living in the future will need to be adaptable, be problem solvers, be creative, connected, collaborate, share their learning, expect rapid change, and function in an information-rich society (Bull & Gilbert, 2012; Burns 1995; Dwight & Garrison, 2003). Literature on 21st century learning thus promotes discourses concerning the fundamental purpose of schools, as well as fundamental questions as to what students should learn in them, (Bull & Gilbert, 2012; Dwight & Garrison, 2003; OECD, 2006; Pink, 2005; Wagner, 2008)

To compete globally in the 21st century, businesses and industry are required to be responsive, flexible and innovative—requirements that make people's work unpredictable and uncertain. These requirements also change the ways we learn, work and live our lives, and are linked to shifts in international thinking about education and curriculum development, geared to creating the conditions to cultivate powerful 'learners' (Taylor, 2002).

Knowledge, competencies and values in a changing world

As societies evolve and develop, changes occur in their culture and values that reflect differing views of what are important and desirable attributes to be reflected by their citizens. Writer Malcolm Gladwell (2000) described how and why social change happens, referring to a "tipping point" moment when critical mass is reached and circumstances coincide to set up a new and unstoppable course resulting in a new, markedly different reality. These changes usually impact on the young, as they are encouraged to emulate the newly adopted values (Pritchard, 2002), which also creates a new climate for education (Wagner, 2008). The changes are usually incremental in nature and cause no great trauma to individuals. Over a period of time, however, these small adaptations can move society's perceptions quite some distance from its original philosophy (Lackney, 2002). By 2000, education had seemed to reach this tipping point, with previous models of education believed by many to have become redundant and out-dated especially for meeting the demands of citizenship, schooling and careers for the 21st century (Bull & Gilbert, 2012; Dwight & Garrison, 2003; OECD, 2006; Pink, 2005; Wagner, 2008).

The Delors Commission on Education for the Twenty-first Century (UNESCO, 1996)

clearly outlines the confronting issues facing humankind in the future. It proposed an integrated vision based on two key concepts, 'learning throughout life' and 'the four pillars of learning'. The report affirms a belief that choices about the society we wish to live in should determine the kind of choices we make in education policies. The report proposes that education is one of the principle means of fostering a deeper and more harmonious form of human development in a future dominated by a globalised society constantly brought into view through changing political, economic and financial options. The Commission's report was closely aligned with the moral and intellectual principles that underpinned UNESCO (United Nations Educational, Scientific and Cultural Organisation), and emerged as a basis for reflection and debate when considering current dynamics of social transformation and the future of work.

In the mid-1980s, Handy (1985) charted the future of work. He suggested:

> The full-employment society was becoming the part-employment society; labour and manual skills were yielding to knowledge as the basis for new business and new work; industry was declining and services were growing in importance; hierarchies and bureaucracies were going out, networks and partnerships were coming in; the one-organization career was becoming rarer, job-mobility and career changes more fashionable. (p. 2)

Burns (1995) believed that as part of their education, students entering the environment suggested by Handy (1985) would need to develop general or portable skills, which they could apply in a wide variety of settings, rather than job specific skills. Teaching would need to change so students could develop the skills they would require in a more authentic and purposeful way. Burns claimed: "people need technical skills and knowledge plus the personal attributes to be able to apply their abilities to new and unexpected situations" (1995, p. 22). Shortly after, Browning and Spencer (1997) predicted the world was facing a revolution, and that a new economy would emerge where communications technology would create global competition, where innovation would become more important than mass production, and where rapid change would be constant. In the past decade, these changes have eventuated, and their immense impact has been evident globally (Brinkley, 2008). One such consequence has been major educational policy change—the tipping point (Gladwell, 2000). Bull and Gilbert (2012) identified a 'paradigm shift' in international thinking about education, driven by massive social, economic and technological changes in the world outside education.

Discourses promoting the urgency for education systems to better prepare students for a world where technological change is ubiquitous, have encouraged changes to curriculum design, pedagogy and learning environments necessary to foster a different set of skills, knowledge and dispositions. Schletchy (2001) emphasised the need to recast teachers from performer and delivery professionals, to engaging students in working on knowledge, rather than passively absorbing knowledge, promoting the idea that learning is an active process. Hargreaves (2002) focused on transition to a knowledge economy and its consequences for educational systems, and schools in particular. He predicted that while literacy—including IT literacy—and numeracy would remain part of the core curriculum, schools would come under increasing pressure to provide new forms of knowledge such as meta-cognitive abilities and skills—thinking about how to think, and learning how to learn.

To end this section, I return to the reflections from the UNESCO (1996);

> There is, therefore, every reason to place renewed emphasis on the moral and cultural dimensions of education, enabling each person to grasp the individuality of other people and to understand the world's erratic progression towards a certain unity; but this process must begin with self-understanding through an inner voyage whose milestones are knowledge, meditation and the practice of self-criticism. (p. 14)

Network learning cultures

> The child's own instincts and powers furnish the material and give a starting point for all education. (Dewey 1929, p. 75)

As early as 2007, Rosen concluded technological device use, including the use of cellphones and messaging devices by teenagers had become pervasive. Rosen termed these students the 'Net Generation', revealing a picture of a very different kind of learner. Brown (2000) invited teenagers to design their ideal work and learning spaces and studied what they created and how they worked. He observed their multitasking, constant connection, and rapid movement among multiple open web pages while listening to music and talking on cell phones or responding to friends' instant messages. Microsoft executive, Linda Stone (2007), referred to this multitasking as 'continuous partial attention': "Continuous partial attention describes how many of us use our attention today...to pay continuous partial

attention is to pay partial attention – continuously. It is motivated by the desire to be a live node on the network" (p. 5). Arguably, for emerging digital users, to be connected, is to be alive, to be recognised, and to matter.

Technological determinism is the view that technology is forming or changing culture, and arises from the suggestion that digital technologies are among the most significant transformational innovations in the world today, and in the future (Pink, 2005). By the time I have completed this thesis, three years will have passed with significant innovations making changes to people's careers, living conditions and educational opportunities. This view is endorsed by Bull and Gilbert (2012), who argue that this transformation alone is creating a 'paradigm shift' in education. Pink (2005) argued that the world is moving from an information age to a conceptual age and has done so in little under ten years and progressing at an exponential rate. Pink proposed:

> The future belongs to a very different kind of learner with a very different kind of mind. The era of left brain dominance and the information age that it engendered, are giving way to a new world in which right brain qualities—inventiveness, meaning, empathy—predominate. (p. 2)

Wagner (2008) referred to this emergent new generation of learners as being "prolific communicators, who gravitate toward activities that promote and reinforce social interaction [including] instant messaging old friends, teaming up on an Internet game, posting web diaries (blogging), or forwarding joke emails" (p. 176). He referred to these kinds of Internet users as 'Net Gen'—as did Rosen (2007)—and suggested they display a striking openness to diversity, differences, and sharing; they are at ease meeting strangers on the Net; and that their exchanges on the Internet are emotionally open, often sharing very personal information about themselves. Although technology cannot change one's personality, introverts, for example, use the Internet as a tool to reach out, while extroverts can make their circle of friends even larger, thus ensuring all kinds of learners are emergent within the virtual domain (Wagner, 2008).

Multiple hypertext pathways on the Internet (Dwight & Garrison, 2003) and access to expert practitioners in real contexts of business and industry (Brown, Duguid & Collins, 1989) are enabling learners to learn in and beyond a school's boundaries. Such easy access to information and expertise enables students to browse for valuable 'just in time'

knowledge (Riel, 1998), to progress their thinking, socialisation or immediate problem solving and knowledge needs. This quickly leads to learner autonomy (Wagner, 2008) emancipating students' interest in information. Wagner claimed that students want to be part of the learning process and enjoy learning in authentic (real-world) contexts rather than in a passive form of didactic education. Making learning real and pertinent to their lives increases student curiosity, motivation and knowledge creation (Brown, et al., 1989). Students say they are motivated by solving real-world problems expressing a preference for doing rather than listening (Lombardi, 2007).

The significance of real-world learning was captured by Lave and Wenger's (1991) concept of situated learning. Learning that takes place in the same context in which it is applied is considered an active method of learning where students participate in the co-construction of knowledge. Lave and Wenger argued that this kind of learning allows individual learners to participate, interact and inject their own ideas as ways for growing personally, and making informed decisions by processing information using visual, auditory, reasoning and reflective abilities.

Pedagogic models that create 'powerful learners'—Constructivism

> To prepare him for the future life means to give him command of himself... (Dewey, 1929, p. 292)

> Many methods of didactic education assume a separation between knowing and doing, treating knowledge as an integral, self-sufficient substance, theoretically independent of the situations in which it is learned and used. The primary concern of schools often seems to be the transfer of this substance, which comprises abstract, decontextualized formal concepts. (Brown, et al., 1989, p. 32)

Developing learning approaches for an uncertain future, in which networking and digital technology predominates, requires re-thinking the very understanding educators have of the learning process. Constructivism offers one possibility. Constructivist discourses of learning focus on the individual and are centered on promoting learner-constructed knowledge. Constructivism is a philosophical viewpoint about the nature of knowledge. There are many versions of constructivism, one of which is social constructivism, strongly influenced by Vygotsky's (1978) work. He suggested that knowledge is first constructed in

social contexts and is then appropriated by individuals (Bruning, Schraw, & Ronning, 1999; Cole, 1991; Eggan & Kauchak, 2004). According to social constructivists, the process of sharing individual perspectives—collaborative elaboration–results in learners constructing understandings together that would not be possible alone (Greeno, Collins & Resnick, 1996).

Brown et al. (1989) argued that an individual's knowledge construction can be directly associated with how something is learned and used, as compared to direct instruction (what is learned) with behaviourist models. They suggested that an individual's knowledge will develop in ways that depend on exposure to prior experiences, understanding of language used, physiological well-being, visual stimulation and a situation of need. This is not dissimilar to the perspectives of Dewey (1929), Freire (1985), Giroux (1988), and Gilbert (2005) who reinforced the need for change in schools to prepare people to participate in the knowledge based societies of the future. Approaching learning from this perspective requires a rethinking of practice where teaching is more aligned with a learning-mentor, advisor, or facilitator model, and co-constructivist educational theory. Giroux (1988) argued that constructivism is based on experiential learning through real life experience to construct and condition knowledge and it encourages hands-on, collaborative, project based, experiential and discovery learning where students are able to engage in creativity, innovation, visual/spatial, musical/rhythmic, bodily/kinesthetic, verbal/linguistic, logical/mathematical, interpersonal, intrapersonal, and naturalistic intelligences. Constructivism diverges from behaviourist models of pedagogy, moving the responsibility of teachers from supporting students to "intervene[ing] in their self-formation and the formation of others" (Giroux, 1988, p. 16).

The constructivist approach of Brown et al. (1989) strongly suggests that students, when engaging in contextualised experiences, are more likely to experience moments of curiosity, analysis and synthesis of information, working with others, critiquing existing and established conditions, present their findings, metacognition, developing new knowledge and are more likely to become life-long learners. Bull and Gilbert (2012) argued: "If 21st century schooling's main goal is to build students' 'learning capacity' to help them develop as life-long active, independent learners, then teachers need to be 'learning coaches'—a role that is very different from that of a traditional teacher" (p. 2). As previously discussed, there is a need to focus students on achieving very different skills relevant to 21st century learning needs. Teaching students in a way that encourages them to work in isolation and compete

with one another, to learn discrete facts and skills rather than to solve complex problems (Bull & Gilbert, 2012), and to follow fixed routines rather than to experiment with novel tasks will severely disadvantage students entering 21st century working environments. Considering that twenty-nine years ago Giroux (1988) argued for a transformation in contemporary education, claiming that teaching requires a 'critical pedagogy' that promotes and nurtures learning democracy, very little appears to have changed in educational delivery. He argued then that "critical pedagogy recognizes the contradictions which exist between the openness of human capacities that we encourage in a democratic society and the cultural forms that are provided and within which we live our lives" (p. 21).

Rethinking education: The OECD perspective

> To have any influence at all on the future you have got to know,
> first, where you've been, and next, the direction you want to go.
> (Beeby, 1983, p. 17)

The confluence of the various trends and influences highlighted by literature considered to this point lead, almost predictably, to policy responses. The Organisation for Economic Co-operation and Development (OECD) is a unique global forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD provides a setting where governments can compare policy experiences, seek answers to common problems, identify best practice and work to co-ordinate domestic and international policies. Anticipating the challenges learning in the 21st century might entail, in the 1990s the OECD's Centre for Educational Research and Innovation (CERI) launched Schooling for Tomorrow, a bid to stimulate international discourse to reflect on impending major educational changes (OECD, 2006).

The OECD argued that people working in education at all levels needed to be able to look beyond immediate constraints and develop visions of what the future of schooling should look like, in order to avoid undesirable futures. With a growing number of stakeholders making new demands on education, CERI created a 'futures thinking' programme that encouraged the use of scenarios to arouse debate aimed at opening new horizons, clarifying visions and informing strategic thinking to help shape the future of education (OECD, 2006). The OECD (2006) developed three different approaches to using scenarios: one, to provoke strategic conversation; two, to stimulate genuinely new, visionary thinking; and

three, as a motivator for getting unstuck. These approaches suggested a method to deal with what seemed to be a rapidly changing world.

Schooling for tomorrow—the New Zealand context

Understanding the local policy initiatives of the New Zealand Ministry of Education requires some understanding of its recent reform context. The state, through the Ministry of Education, has applied a variety of interventions to improve public education over the past thirty years, such as reviews of curriculum, assessment and educational environments (Butterworth, G., & Butterworth, S. 1998; McQueen, 1990). Amongst the most significant intervention was the Tomorrow's Schools reforms (Ministry of Education, 1989) that created self-managing schools as the unit for educational administration. In response to the 'Picot Report' (New Zealand Taskforce to Review Education Administration, 1988), that arose from the work of the Taskforce to Review Education Administration, led by businessman Brian Picot, Tomorrow's Schools involved the dissolution of the Education Department, Education Boards, and School Committees. These bodies were replaced by an autonomous Ministry of Education (MOE), Education Review Office (ERO), and elected Boards of Trustees (BOT), the latter to govern schools, set their policies, manage the annual budget (under the guidance of MOE) and oversee staffing. Changes included new and enhanced, delegated functions and responsibilities for school principals. The government's stated aims of decentralisation included a mix of outcomes and processes, which were: to improve educational opportunities, to meet the needs of Māori students more effectively, to prioritise community knowledge and responsibility, and to encourage flexibility and responsiveness (Gordon, 1989; 1997).

In 2002 and in response to OECD initiatives, the New Zealand Ministry of Education along with a newly elected government, launched a project named Secondary Futures to open dialogue between a diverse set of participants about the purpose and direction of secondary schooling (Ministry of Education & Secondary Futures, 2004). Secondary Futures collected formal written feedback from over 900 participant workshops nationally, to establish that the time was right for exploring alternatives to bureaucratic schooling systems in New Zealand (Roberts & Gardiner, 2005). Within this literature there is reference to 'schooling for tomorrow' and '21st century schooling'. This was the foundational thinking for '21st century learning' and the 'Nature of teaching in the 21st

century' referenced in Ministry of Education documentation and policies (Ministry of Education & Secondary Futures, 2004).

Secondary Futures was a move away from centralised educational policy decision making, by extending the consultation process away from policy makers, taking it to a range of stakeholders around the country, enabling voices not traditionally heard to contribute to public educational policy debate. This initiative followed the scenario model adopted by the OECD where a specialised set of resources were developed to help participants consider future possibilities that could shape New Zealand's secondary school sector (The Ministry of Education & Secondary Futures, 2004). The Ministry of Education believed that by examining the relationship between current accounts of innovation and practice, and relationships to the possible scenarios, as well as preferences around these, it should be possible to 'map backwards' the policy changes that could occur to create this environment.

As with the CERI intentions, Secondary Futures was designed to engage all stakeholders in a national discussion to broaden views of what schools would look like in twenty years and to ask questions about what forms society might take. Secondary Futures guardian, Mason Durie (2009), claimed that current learners have different learning needs and styles, which the project aimed to address. The Secondary Futures initiative, by deviating from traditional methods of policy creation, opened up the potential for national discourse to contribute ideas, gaining credibility from within the teaching profession (Roberts & Gardiner, 2005). The initiative, although losing momentum three years after inception, provided the springboard for consideration and intention of a revised New Zealand National Curriculum.

The New Zealand curriculum

The New Zealand Curriculum (2007) created a framework for curriculum implementation across all schools in New Zealand. Karen Sewell, Secretary for Education at the time, stated in the Foreword: "This curriculum is a clear statement of what we deem important in education. It takes as its starting point a vision of our young people as lifelong learners who are confident and creative, connected, and actively involved" (Ministry of Education, 2007, p. 4). The curriculum clearly indicates that young New Zealanders are to be provided with learning experiences that equip them with the knowledge, competencies, and values they will need to be successful citizens in the twenty first century (2007).

There is, however, an inherent dualism or ambiguity reflected in this curriculum. The opening pages are aspirational, locating enquiry and student-centred learning as keys to future-focused education, emphasising democratic and authentic approaches to learning. The latter sections of the document have very different emphases, however, being especially focused on standards-based assessment, well-defined curriculum categories and domains of knowledge, at odds with the aspirations to exploratory and student-centred approaches. For Benade (2012), the front of the curriculum typifies "an approach characterized by notions of a globalized postindustrial, postmodernist knowledge economy and associated reorientation of personal identity, while...[the back of the curriculum typifies]...the traditional industrial, modernist notion of differentiating academic and vocational" (p. 191).

Discourses on the importance of students being central to the teaching and learning process are not new or novel. These discourses have acknowledged the potential for effective community and social engagement, participatory democracy and meaningful student-driven, collaborative and independent learning opportunities (Bereiter, 1992; Brown et al., 1989; Dewey, 1929; Dwight & Garrison, 2003; Estes, 2004; Gardner, 1983; Giroux, 1988; Pederson & Williams, 2004; Vygotsky, 1978). These perspectives are seemingly in part what influences the 'front end' of The New Zealand Curriculum (Ministry of Education, 2007), with its collection of key competencies and values. Arguably too, it may be suggested that the effect of the rapid, exponential growth of digital technologies, and deterministic literature proposing a fast-changing world, helped to galvanise education policy makers to bring this revision to fruition.

The requirement that "students [be] at the centre of teaching and learning...[and]...experience a curriculum that engages and challenges them" (Ministry of Education, 2007, pg. 9) requires teaching approaches suited to facilitating this kind of learning. Reinforcing this view is Sewell's Foreword statement (Ministry of Education, 2007) that concludes by challenging educators to develop learning experiences that offer young people effective and engaging teaching. Doing so requires approaches that are, however, divergent to earlier, traditional approaches to schooling. Moreover, non-traditional pedagogical approaches are required when offering programmes of learning to facilitate the values and competencies inherent in the 'front end' of the curriculum (Bull & Gilbert, 2012). Indeed, one of the innovative qualities of The New Zealand Curriculum is its openness to schools engaging in developing programmes of learning designed to ensure

that students in the communities they serve are prepared for a changing twenty-first century world.

The commitment of the Ministry of Education to a 'cutting-edge' educational facility design suggests one further way in which futures education could be facilitated (Ministry of Education, 2011). Accordingly, over the last seven years the New Zealand Ministry of Education has invested in many new schools (including some secondary schools), all of which have evolved ideas of innovative design for learning environments, intended to deliver on the promises of futures–focused education. Yet, these buildings have been designed and commissioned without adequate spatial or educational design research for the New Zealand context. Now that these schools have been commissioned and are operational, there is a need to study the role of the designed environment in meeting the needs of learners and pedagogic approaches of teachers endeavouring to implement 21st century curriculum theories. In what follows, the literature focus moves to concerns with the built infrastructures of education, rather than the critical fields of curricula and pedagogical innovations. The following accounts are discursive inasmuch as they are a review of literature, but the focus of that literature is on the non-discursive realm of building fabrics, their understanding, measurement, evaluation and agency. It is facilities design, I argue, that have an agency that must be fully assessed as a fundamental objective for this research.

NON-DISCURSIVE SPACES

Researching learning spaces

In the 1940s, pioneering Italian teacher and psychologist Loris Malaguzzi founded the Reggio Emilia approach to learning on the premise that children develop through interactions, first with adults in their lives—parents and teachers—then with peers, and ultimately with the environment around them. Environment, argued Malaguzzi, is the third teacher, (Hall et al., 2014). A growing body of literature supports the notion that school environments positively impact teaching and learning (Bergsagel, et al., 2007; Byers et al., 2014; Fisher, 2005; Lackney, 2001; Nair & Fielding, 2005; Semper, 2004; Walker, Brooks & Baepler, 2011; Wolff, 2002; Woolner, 2010). These writers have reinforced the proposition that environments are representative of Malaguzzi's notion of the third teacher (Cannon, 2010). For example, Semper (2004) argued that while learning is often thought to be a process of mind, much of what actually occurs during the learning process is

predicated on the learner's environment. Further international research has led to seminal studies that have gradually informed modern educational facility designs, such as Lackney's (2002) 'Thirty-Three Educational Design Principles', Wolff's (2002) 'Design Features for Project Based Learning', Washor's (2003) 'Innovative Pedagogies and School Facilities', Nair & Fielding's (2005) 'Language of School Design', and the more recent collaborative project of Cannon Design + VS Furniture + Bruce Mau Design (2010) 'The Third Teacher: 79 ways you can use design to transform teaching & learning'.

Notably, many of these studies have been driven primarily from the discipline of architecture rather than the discipline of education. Studies in the United States of America examined the make-up of design teams that designed new learning environments to support student-centred learning (Lackney, 2002). Lackney's research established that the majority of new learning environment design teams were limited to property managers, principals and architects, severely limiting the input from key stakeholders, for example, teachers and students. The emergence of an interest in school design from architects signalled a change in thinking about school environments as a way of making a difference to student comfort and performance. An example of this was the Carnegie Foundation study of 1988 that found student attitudes concerning education are a direct reflection of their learning environment (Ryan & Patrick, 2001).

Many of the authors named above, primarily from North America, were pioneers of school environment change. Much of the early documented work on reviewing educational environments was a result of the poor condition of schools in the United States of America in the late 1980s. These North American architects were responding to a crisis in education stemming from the deterioration of school facilities in their country. Assessments of empirical or physical analyses of the infrastructure of school buildings by Moore and Lackney (1993) noted that the poor condition of schools could negatively affect student comfort and performance. Conversely, they argued for the positive transformational effects of acoustics, natural light, colour, warmth, visual connectivity and ergonomic suitability.

Moore and Lackney's (1993) method—one that was to become widely adopted by many architects—was to critically review literature on the relationship between educational performance and school facilities. One Washington, D.C. study they cited (Edwards, 1991) found that educational building conditions were detrimental to student performance, and estimated that improved facilities could lead from 5.5% to 11% improvement on

standardised tests. Despite such well-documented cases, there was little agreement among teachers, administrators, public officials, or the public at large regarding the significance of these statistics, or even whether school buildings themselves played a fundamental role in educational outcomes.

The focus on the physical condition of schools over the past twenty years has since translated into a debate about a complete reshaping of education systems and policy (Bergsagel, et al., 2007; Fisher, 2005; Lackney, 2001; Moore & Lackney, 1993; Nair & Fielding, 2005; Semper, 2004; Walker, et al., 2011; Wolff, 2002; Woolner, 2010). What much of this research failed to do, however, was to consider 'learning' as a necessary criterion in the evaluation of the performance of educational buildings (Lackney, 2002). Despite this finding, some research links pedagogy to space. Dudek (2000) explored smaller breakout spaces for focused reading or as a separate resource, and established that teachers are uniquely equipped to throw light on the particular social and physical contexts of their classroom spaces. Washor (2003) studied trends in school design in the last decade in the United States of America and established three themes emerging from the research and literature on school facilities design: "First, facilities designs have been shown to have an impact on learning. Second, these designs have been shown to have an impact on students and others who work in the schools. Third, there have been few innovations in school facilities design" (pg. 10).

In 2005, an Australian study launched by the Victorian Department of Education and Training, examined pedagogy and space performance measures (Fisher, 2005). This study was designed to pilot innovative pedagogies across eighty schools and was based on pedagogical, curriculum, professional development, technology and learning environment design strategies. Fisher's research provided an interesting perspective on the links between space and practice, based on a number of factors including the skills, knowledge and dispositions considered important in 21st century learning (Fisher, 2005). He established that there is insufficient qualitative research on the relationship between pedagogy and the design of learning environments and recommended further research to focus on the kinds of student abilities that education wants to achieve, and how these can be assessed.

Research on ILEs continues to gain momentum. Since beginning my research in 2014, when there was very little New Zealand or Australian literature around this topic, there have been a number of studies commenced and published in Australia. The University of

Melbourne, following initial work by Ken Fisher in the early 2000s, launched the Learning Environments Applied Research Network, now with a significant number of researchers, both doctoral and post-doctoral, working on projects under the rubric Evaluating 21st Century Learning Environments. This work is a multidisciplinary forum that brings together academia and industry to research, imagine and discuss physical learning environments in different contexts. A multitude of publications have resulted from this collective that are based on understanding how the built environment critically impacts the educational experiences of teachers and learners (Bradbeer, et al., 2017; Byers, 2014; Byers et al., 2014; Saltmarsh et al., 2015; Cleveland & Fisher, 2014; Cleveland, 2017; Imms, 2016).

Researchers associated with the above initiatives have explored the notion of space and pedagogy. Saltmarsh et al. (2015) discuss students practices in non-traditional classrooms, adding to discourse about the twenty first century learner by investigating pedagogic practices in open plan learning environments. They argued that non-traditional learning spaces have become complex settings through which students negotiate increased learner autonomy and have identified four significant students practices that are central to the development of pedagogies for teaching in non-traditional learning spaces. Similarly van Merrienboer, McKenney, Cullinan, and Heuer (2017) identified that the quality of education suffers when pedagogies are not aligned with physical learning spaces. Realising there was very little known about how to reach powerful alignment of pedagogies and physical learning spaces, the above authors developed a "participatory design process to realise physical spaces and school buildings that optimally support specific visions of learning and pedagogy", (p. 1). This process consists of three phases in the design process: (1) specifying the pedagogy, (2) aligning the pedagogy with seating arrangements and physical learning spaces, and (3) realising the school building.

The OECD's Centre for Educational Research and Innovation continues to publish a wide variety of studies, including The OECD Handbook for Innovative Learning Environments, published in June 2017, in which Andreas Schleicher, OECD Director for Educational Skills, claimed: "If there has been one lesson to be learnt about innovation education, it is that teachers, schools and local administrators should not just be involved in the implementation of educational change but they should have a central role in its design" (p. ix).

Despite significant research activity in Australia in last six years, there are virtually no studies investigating connections between environments, pedagogy, and student learning within a New Zealand context. This was lamented by the PPTA a recent annual conference (2017). The PPTA acknowledged that research sometimes lags behind change in practice, but some schools have had these kinds of spaces for nearly two decades and the opportunities for research in these schools should have been taken by now.

Price Waterhouse Cooper (2000) were commissioned to research factors that influence learning outcomes in classroom environments. PWC's assessment criteria included spaciousness of the classroom, classroom adaptability, ability to control furniture layout, natural and artificial lighting, and temperature control. PWC's findings showed that 'large and spacious', regularly shaped rooms, with close access to support spaces that were easily adapted to different situations, rated highly in terms of the efficacy of a learning environment for teaching purposes. They also measured the financial and pedagogical value of new school environments where building performance was based on empirical assessments of the relationship between a school's capital investment and student performance, this performance typically related to qualification outcomes. The research focused on physical building elements, and did not engage significant issues such as questions of student motivation, belonging, truancy, teaching style, and whether new learning environments altered how subjects were taught, or were relevant for learning.

History of school design in New Zealand

In 1940, there were 156 schools in New Zealand offering secondary education: 39 secondary schools, 96 district high schools, and 21 technical high schools (Ewing, 1970). In 1944, the school leaving age was raised from 14 to 15 (Openshaw, Lee, G. & Lee, H, 1993). At the same time, a gradual move started away from separate secondary schools and technical high schools toward comprehensive secondary schools serving both, and district high schools started falling out of favour to separate secondary schools. Combined with the post-World War II baby boom, the number of secondary students swelled and a large number of new secondary schools had to be built. By 1960, the number of secondary students had tripled from 39,000 to 140,000 and the number of secondary schools had increased to 239, comprising 102 secondary schools, 96 district high schools, and 41 technical high schools, (Ewing, 1970).

With the large number of new schools being built, most state secondary schools in the 1950s, 1960s and 1970s were built to common designs. The first common design was the Naenae type (after its first use at Naenae College) in 1953. Schools were built with long two-story classroom wings of mixed concrete and timber construction. This was followed by the Henderson type (after Henderson High School), which was a single-story all-timber version of the Naenae type, (Swarbrick, 2012). By 1957, secondary schools moved to consisting of blocks of classrooms, with the first block classroom schools utilising single-story timber buildings each containing six classrooms.

In 1960, the Nelson plan (named for the city in which it was designed) created two-storey H-shaped timber buildings containing 12 classrooms, (Swarbrick, 2012). The design lasted a decade, with the Nelson classroom block going on to become the most numerous typology of classroom block found in New Zealand secondary schools. In 1971, the Nelson plan was replaced with the S68 plan (after the 1968 prototype at Porirua College), which featured single-storey classroom blocks of concrete block construction, with low pitched roofs, and internal open courtyards.

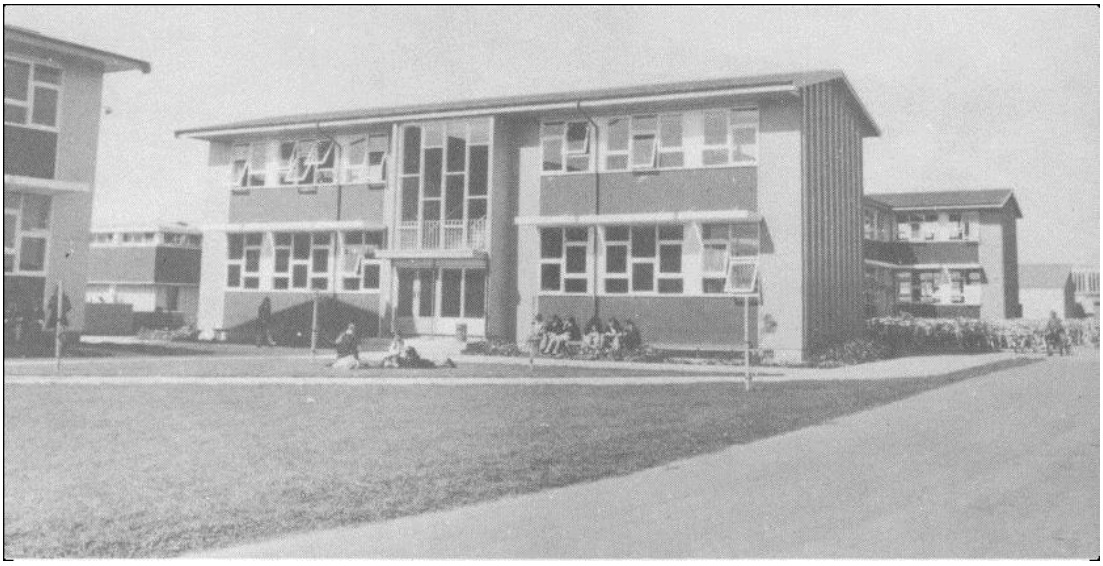

Fig 1. Photograph of a Nelson Block Learning environment.[1]

[1] From *Ministry of Education: Reference Designs for Standard Classroom Upgrade* (2016, September). Retrieved from http://www.education.govt.nz/assets/Documents/Primary-Secondary/Property/School-property-design/Flexible-learning-spaces/BriefingDocumentNelsontwostoreyblock-.pdf

Fig 2a & 2b. Photograph of a floor plan for Nelson Block Learning environment.[2]

In 1980, two new common design plans were introduced: the Whānau plan[3] used at Macleans College, and the Leeston plan used at Ellesmere College. Simultaneously, however, student numbers plateaued and secondary school construction dwindled, resulting in common design plans being dropped in 1982 in favour of schools being individually designed. By 1980, there were 265 secondary schools and 35 district high schools, with technical high schools having been completely phased out. In 1989, the school leaving age was raised to the present age of 16. In 1989, the Tomorrow's Schools reform enabled individual school communities through their elected Boards of Trustees to make decisions about managing the learning programmes and school environment. These moves require parent communities to remain abreast of educational theories underpinning new policy decisions associated with educational changes, with obvious implications for the implementation of the Ministry of Education property strategy (Swarbrick, 2012).

[2] *From Ministry of Education: Reference Designs for Standard Classroom Upgrade (2016, September). Retrieved from http://www.education.govt.nz/assets/Documents/Primary-Secondary/Property/School-property-design/Flexible-learning-spaces/BriefingDocumentNelsontwostoreyblock-.pdf*

[3] *Whānau (Māori for 'extended family') plan design refers to the separation of school blocks (rather than long school blocks as in the S68 model) to provide an identity as well as a home base for vertically integrated groups of students (form class). Designers believed this was a far more humane approach to organising large numbers of students. In theory the whānau house system offers, fosters and encourages: an extended family of students and staff; values, social interactions, leadership opportunities, group loyalties and mutual support; a feeling of belonging and self-esteem, where students feel accepted and valued; and service to the community (Swarbrick, 2012).*

Fig 3. Photograph of the spatial configuration of a Whanau School Site plan.[4]

Fig 4. Photograph of Whānau built environment with distinctive separate homebase structures.[5]

Rethinking school design principles

Many traditional school buildings (such as those reflected in the New Zealand designs just considered) are designed to cater for an 'industrial style model' of teaching (Bolstad, Gilbert, Bull, Boyd & Hipkins, 2012), where students are treated as passive receivers of information and where delivery style didactic teaching methods predominate. The school design that best facilitated this style of learning was a single cell classroom. In support of this

[4] *From Ministry of Education - Patrick Corfe, Landscape Architects (2012). Retrieved from https://corfe.co.nz/wp-content/uploads/2012/04/port6.jpg*

[5] *From Ministry of Education - Patrick Corfe, Landscape Architects (2012). Retrieved from https://corfe.co.nz/wp-content/uploads/2012/04/port6.jpg*

view, the previously cited arguments of Lackney, (2002), Nair and Fielding (2005), and Woolner et al. (2012), suggested that the physical design of a school can constrain teaching and learning, entrench practice and make it difficult to instigate change. Lackney (2002) claimed that changes to a school's physical environment may not, however, necessarily lead to changes in teaching and learning, contrary to the notion that designing and building flexible learning facilities will bring about change. As Washor (2003) and Woolner et al. (2012) claimed, teachers are most likely to default to industrial models of teaching where knowledge is a delivered commodity.

There are very few empirical studies to support these theories (Fisher, 2005). The majority of the studies are technically orientated, analysing building codes and practices that enhance building performance and design, but not necessarily focusing on how building configurations or conditions affect actual practices of teaching and learning. An interesting observation on the early research associated with the modification of educational environments is that environmental designers appear to be the strongest advocates for change, and many of these researchers demonstrate a determination to positively influence the way education is structured and delivered (Bergsagel, et al., 2007; Fisher, 2005; Lackney, 2001; Nair & Fielding, 2005; Semper, 2004; Walker, et al., 2011; Wolff, 2002; Woolner, 2010).

Lackney (2001) derived thirty-three principles (Appendix two) from a variety of sources including the reflective practice of educators and design professionals as well as the empirical research of environmental psychologists and educational researchers. He argued that each educational design principle takes as an underlying premise that all learning environments should be learner-centred, developmentally and age-appropriate, safe, comfortable, accessible, flexible, and equitable, in addition to being cost effective. Wolff (2002) explored the design features of physical environments that support and enhance collaborative, project-based learning at a community college level. This study identified thirty-two design features placed into six categories:

- learning group size,
- functional spaces for learning activities,
- adjacencies,
- furnishings,
- psychological and physiological support of learners, and
- structural aspects (Appendix three).

More recently there have been a number of learning environment studies originating from Australia, where there is a profound interest in innovative learning environments, pedagogy and personalised learning approaches. Fisher (2005) has developed design considerations for new learning environments and focused on New-Generation Learning Spaces. His work is some of the most progressive towards analysing 21st century learning and aligning pedagogy and space to create effective learning communities and has had a significant influence on other architectural studios (Fisher, 2005). Noting the ominous diversity of spatial typologies emerging in the design of learning environments, Dovey and Fisher (2014) developed a system to categorise genres of design. Importantly, they noted that while the typologies tend to describe design trends, they can be better understood as assemblages—spatial configurations in constant iteration—of space and pedagogy. Spaces can [and do] change and become unique to each educative occasion depending on the colonisation at the time. Reflecting simultaneous experiencing of space in this way is significant to this research and will be addressed in the third section—Spatialisation of Power. Byers, et al. (2014) developed discourse on the effect of learning spaces on teaching and learning, analysing the difference in student learning in 'traditional' classrooms and 'new generation learning spaces' (NGLS) to establish if new learning spaces had any measurable effect on how students perceived learning experiences and their engagement levels, with improvements often linked to NGLS.

Yet this work continues to reinforce the notion that all learning occurs at school and thus it fails to explore concepts of holistic integration with communities of practice, apart from a virtual, digital basis, where notions of 'flipped' and 'blended' e-learning assume that learning boundaries are permeable (Benade, 2017a). Wolff's focus on change, learning expectations and educational initiatives resulted in the examination of skills needed by 'workers for the new century', and designing learning environments to enable these skills to develop. Skills comprise abilities to reason, think creatively, make decisions, solve problems, work in teams, work well with other cultures, understand, monitor, correct, design and improve systems, select appropriate technology and apply it to specific tasks, and direct one's personal and professional growth through lifelong learning.

Designing for change

Architectural teams have the design knowledge to influence the way people live, work and learn in spaces, how they feel within these spaces and how they respond to the formal

arrangements, colours and artefacts around them (Lackney 2002, Lackney & Zaifen, 2005; Moore & Lackney, 1993; Nair & Fielding, 2005; Washor, 2003). With education undergoing one of the most far-reaching changes in its history (Coppen, 2002), school design and redesign are becoming a significant market for architects (Lackney, 2002). The 'learning sciences' have provided support and inspiration for a great deal of innovative educational initiative around the world especially in the fostering of effective learning conditions and the design of new learning environments (Lackney, 2002). Lackney suggested instructional methodology developed by theorists in the learning sciences, centred on experience and reflection, integrated curriculum and a focus on independent and customised learning, offers a valuable opportunity to redesign teaching, curriculum, and learning experiences.

Jilk (2001) reflected on his practice: "My thinking as an architectural designer, who is responsible for creating spaces to learn, needs to go beyond the task of accommodating the tried and true, and provide more flexibility and adaptability" (p. 12). On his view, design that only accommodates those attributes is mostly an excuse for not knowing how to do anything else. He argued for an architectural persuasion, where environments actively nudge learners towards freedom and creativity. The concept of 'freedom' is a notion continually debated by critical theorists, futures theorists and innovative architectural designers, especially in the context of schooling (Dwight & Garrison, 2003; Gerver, 2010; Giroux, 1988; Jilk, 2001; Lackney, 2007; Pink, 2005; Prensky, 2008). Freedom is often assumed, especially in choice of learning programmes offered at secondary schools, but in reality, learning is often focused and controlled (Jilk, 2001). This tension between 'freedom' and 'focused control' has a significant impact on a designer's practice when designing new learning environments, and resonates with many international architectural designers (Fisher, 2005; Lackney, 2007; Nair & Fielding; 2005; Sanoff, 2001; Tanner; 2001; Wolff, 2002).

Fig 5: Often architects borrow ideas from commercial projects. This is a modern commercial space that reflects a blend of warehouse/café style.[6]

The images shown in Figures 5 – 8 are examples of four new learning environments. They have similar spatial stratifications but support very different kinds of programmes. There is an ambiguity about all of these spaces, and even though they are designed as school spaces, their very different programmatic engagements could suggest office space, retail space, airport space, or hospital space. They occupy a very similar kind of spatial sequencing that is, each is an open, flexible, changeable type of space.

Fig 6. Photograph of a modern learning environment.[7]

Innovative learning environments are very different to traditional classrooms and can serve as an expression or symbol of a reform and renewal processes for learning, and as a

[6] *From Innovative Spaces, alastair wells, (2014)*
[7] *From Leading and Learning (2014, June 17). Retrieved from https://leading-learning.blogspot.com/2014/06/pegasus-bay-school-ultra-modern-school.html*

challenge to existing instructional methodologies. ILEs commissioned and designed by different architectural designers in New Zealand all have narratives about practice that inform design process. These narratives are open to considerations of how spatial practice is itself understood, as well as the very notion of practice as spatial production.

Fig 7. Photograph of a modern learning environment.[8]

The extent to which these innovative learning environments actually influence educational activity, facilitate innovative programme planning, inspire innovative pedagogy or enhance the capacity for transformative learning should be understood from the perspectives and actions of actual participants working in those environments—what constitutes their spatial practices? There is often an assumption that there is a common vocabulary between architects and educational practitioners, and whenever architects design, teaching and learning follows. In researching the agential understandings of spatial practices in new facilities design, this research study hones-in on such assumptions concerning design efficacy and pedagogical innovation.

[8] *From Adolescent Success: Melbourne School Bus Tour (2015, March 23). Retrieved from* https://www.registernow.com.au/secure/Register.aspx?E=14220

Fig 8: A space that does not look dissimilar to retail space.[9]

Assumptions of a common vocabulary in modern learning environments

> Research indicates that...regardless of improvements in classroom size, spatial configuration, physical features, furnishings or equipment, traditional patterns of direct instruction persist. (Taylor, 2001, p. 4)

Even though educators agree that school facilities are important in the educational process and support the idea for educators to function as professionals, the degree to which they are able to use a learning environment for educational purposes varies considerably (Lackney, 2007; Sanoff, 2001; Taylor, 2002). There is an assumption that all occupants of a newly designed or renovated learning environment will have the necessary knowledge to use its facilities optimally for teaching and learning. In essence, commissioning new educational environments—especially those divergent to any previous design models for secondary schools—presents an important arena for research, action and training that encompasses and parallels the entire building design and delivery process as a means of embedding curriculum development. It also provides a directional framework for training teachers to use innovative school buildings as flexible learning environments (Lackney, 2007).

Lackney (2007) advocated 'education commissioning' for new school planning and design. He viewed education commissioning as the process of involving teachers, students, parents

[9] *From Innovative Spaces, alastair wells, (2014)*

and community partners in developing the design intent, ensuring that all occupants have the opportunity to experience and understand optimal facility use for teaching and learning. Education commissioning starts well before pre-design, informs architectural programming, extends through facility planning, design, and construction, includes post-occupancy evaluation, and extends well into the occupancy of the building and professional development. Nair and Fielding (2005) shared this view: "From our own experience and from the research, we have begun to understand that one of the biggest roadblocks to innovation is the lack of a common vocabulary that all school stakeholders can share" (p. 2).

Despite design development having the potential to be a highly collaborative planning process, the actual participation of key stakeholders involved in a learning environment may be lacking (Sanoff, 2001). The key stakeholders Sanoff referred to are the principal, teachers and community members who will be using the completed educational spaces. As Lackney (2007) claimed, once the learning environment is completed and occupied, many occupants—due to their exclusion from the process—may be unaware of the myriad ways a school facility has been designed to support teaching and learning. Lackney argued:

> More often than not, occupants of schools, teachers, administrators and students alike use the school facility with a WYSIWYG mentality ('What You See Is What You Get'), not realizing the full potential of the school facility for learning; recall the open classroom experiment of the 1960s and 1970s to illustrate what happens when teachers are not part of the design group or trained to use the new learning environment as designed. (2007, pg. 3)

Taylor (2002) argued that all stakeholders, from students to community, must be involved in the programming and design of learning environments. She discussed the School Zone model for participatory planning, which establishes a system for learning across student developmental needs, integrated subject matter disciplines, and learning processes. Using the metaphor of a three-dimensional textbook, Taylor linked the educational system to the design of the built, natural, and cultural environments within which the resultant architecture can act. Her work reveals basic patterns for reform in school curriculum and facilities design revolving around the democratic design process where the whole community has input, and through this input the community develops a literacy for

intelligent participation, appreciating the complexity and benefits for restructuring a school's facilities that cultivate young people as powerful learners.

Two main themes arise from this work: The need for the whole community to have a connection—for intelligent appreciation, participation and contribution—with the design process. There is equally the need to create the conditions that inspire, encourage, and facilitate—as pedagogic practices—young people to be powerful 'learners'. Taylor (2002) identified a model of synergy between users and environment with an emphasis on collaboratively creating the environmental conditions that meet the needs of students to become 'powerful learners'.

Nevertheless, there is significant research evidence (Moore & Lackney, 1993; Nair, 2002; Taylor, 1991/2002; Washor, 2003; Wolff, 2002) that designers encounter difficulties when they design for educational purposes. Apart from minimal stakeholder involvement, is the problem of negotiating the various ways education has been interpreted and delivered across schools. The conventional wisdom of some school leaders is that educational facilities are 'containers' within which students are located and, in turn, students are treated as vessels to be filled (Moore & Lackney, 1993). Until recently, many educational decision makers believed that the design of these containers had little to add to the educational process (Clark, 2010). Perhaps a more fundamental inquiry regards spatial ontology: How is space essentially a practice rather than a set of physical and measurable components? This is to be more fully addressed in the following part of this literature review.

SPATIALISATION AND POWER

Introduction

The preceding section of the literature review engaged with the non-discursive space of educational environmental facilities in contexts of drivers for innovation resulting from 21st century educational initiatives. My research focuses on two school facilities commissioned, designed and built in the last ten years. The emphasis in these schools has been favour of encouraging an open approach to the design of facilities. Two recurrent issues, both here and overseas, has been the lack of evaluative studies on the effects of new school designs on learners and teachers, with evaluative studies focusing especially on the physical functioning and programmatic functioning of facilities themselves. The second issue is an ongoing tension between those who have aspirations for futures-directed education and those who

see such directions being achieved at the cost of more traditional understandings of learning.

From my research, it appears that design communities are driving environmental change, while those in educational fields are more reactive than active as change agents. This points to a separation between the discursive spaces of ILEs that address curriculum change and pedagogy, and the non-discursive spaces of ILE, with their design-driven agendas. An aim of this study is to bring into discussion architects who design facilities and educationalists and students who occupy them. Addressing the issue of spatial ontology will help to create an enhanced understanding of this relational space of design and occupancy.

Therefore, what follows is a brief account of a relevant spatial ontology. As mentioned previously, space is practiced before it is known (de Certeau, 1984). Hence it is important to develop an understanding of the production of space via our doing. This initial theme of practice will be addressed primarily in discussing the work of Henri Lefebvre. Spatial practices, our agencies, also need to address questions of power. If emancipatory pedagogies call for empowering students, how does power work? What is the relation between space and power? How are relations of power productive of us as spatial practitioners? This second theme of power is to be addressed in discussing the work of Michel Foucault. There is a third theme that addresses something often overlooked in discussing space and spatial practices. For the most part, we do not theorise or thematically reflect on the spatiality of our practices. We just, in an everyday sense, do things within a spatiality that is un-thematised and engaged in an average way. Yet designers are technicians of space whose role is to explicitly theorise spatial dimensions. What is the relation between our everyday encountering of the spatiality of practices and the encounters of the experts of space? This third theme of the everyday is engaged through the work of Michel de Certeau.

Developing an understanding of a spatial ontology will therefore be limited to three 'categories' or thematic frameworks: namely, practice, power and the everyday. These themes are presented from the perspectives of Lefebvre, Foucault and de Certeau, supplemented by additional literature from urban and political geography, as well as the field of education. The themes are introduced next as preparation for them to form an important groundwork for discussion of the empirical findings of this research in Chapter Six, and in relation to key literature addressed in the first two sections of this chapter.

The themes of practice, power and the everyday are not universally the ontology of space. Phenomenologically speaking, these categories are situated and therefore are defined in relation to 'doing education' in its multiple meanings. For the most part practice, power and the everyday go un-reflected when we discuss the 'doing' of education, while a phenomenological hermeneutic interpretation of 'doing education' aims to bring such ontological structures into relief. The themes or categories of practice, power and the everyday are predominant in the process of education in space. These themes are not usually theorised by architects, principals, teachers and students, when discussing what they do. They rather simply describe what happens in a more-or-less average way, yet these descriptions reveal a spatial ontology.

The three theoretical frameworks come from French cultural philosophers of the mid-to-late twentieth century. Not coincidentally, each was influenced by the development of the phenomenology of Martin Heidegger in France, especially after World War II. Following the wholesale destruction of European cities during that war, cultural philosophy turned especially to questions of space. Lefebvre, Foucault and de Certeau were influential in France and more broadly. While there are deep common concerns between them, they are distinct in their approach and interpretation.

The production of space

> Like all social practice, spatial practice is lived directly before it is conceptualized...(Lefebvre, 1991, p. 34)

Henri Lefebvre was a 20th century French philosopher and sociologist who understood philosophy as critical conscience on real life. He was a prolific Marxist intellectual whose most important contributions to social thought are the 'critique of everyday life', which he pioneered in the 1930s, introducing the concepts of the 'right to the city' and 'the social production of space'. Lefebvre argued that the notion of 'everyday life' was underdeveloped when compared to critical writings on technology and production. Capitalism's project is the colonising of everyday life, wherein capitalism survives and reproduces itself. Without a project to revolutionise everyday life, capitalism continues to diminish life and inhibit the self. Crucial to Lefebvre's thinking was a radical understanding of the notion of practice as essentially situated or spatialised. Or rather, the situatedness of everyday practices is constitutive of space. Space is produced from out of everyday practices.

Lefebvre fundamentally shifted the predominant Cartesian mathematical notion of space as homogenous, within which things are produced. For Lefebvre space is socially produced and made productive in social practices. Thus, the absolute space (physical geometrical) is influenced and transformed by the multiple interactions of people, what people do physically, emotionally or cognitively. Lefebvre's accounts foregrounded everyday spatial notions such as a 'room' in an apartment, or the 'corner' of a street, or marketplace, shopping or cultural 'centre'. This builds descriptions of social spaces: (social) space as (social) product. His project did not aim to produce a (or the) discourse on space; rather its aim was to expose the actual production of space by bringing various kinds of spatial existences and the modalities of their genesis together within a single theory (Lefebvre, 1991).

His key publication, in relation to spatial ontology, is *The Production of Space*, in which Lefebvre developed an understanding of spatiality in what he called the reproduction of social relations of production (Lefebvre, 1991). He contended that there are different modes of production of space from natural space (absolute space) to more complex spatialities whose significance is socially produced—social space. Lefebvre analysed each historical mode of social (re)production as a three-part dialectic between representations of space (the way designers conceive space, for example), the perceptions and spatial imaginary (or spatial practice) of the time, and everyday practices and daily lived experience of space (or representational space). In *The Production of Space*, Lefebvre argued that space is a social product, or a complex social construction, based on values and the social production of meanings, which affects spatial practices and perceptions: "...(social) space is a (social) product...the space thus produced also serves as a tool of thought and of action...in addition to being a means of production it is also a means of control, and hence of domination, of power" (Lefebvre, 1991, p. 26). Already with Lefebvre we have a spatialising ontology grounded on fundamental concepts of practice, power and the everyday. Hence, in additionally engaging with Foucault and de Certeau, it will be to argue for nuanced differences in how power is realised or in how the everyday is conceived.

SPACE AND POWER

> What makes power hold good, what makes it accepted, is simply the fact that it doesn't only weigh on us as a force that says no, but that it traverses and produces things, it induces pleasure, forms knowledge, produces discourse. It needs to be considered as a productive network, which runs through the whole social body, much more than as a negative instance whose function is repression. (Foucault, 1980, p. 119)

Lefebvre considered that power was essentially coercive, that power inhibited freedom and that emancipation meant essentially a release from forces of control. This is entirely in keeping with Lefebvre's Marxist epistemology wherein power is possessed or held, something to be taken from others or threatened by others. Foucault fundamentally disagreed with this notion of power, and therefore with Lefebvre's subject of power and the very notion of practice understood in relation to power.

As the quote above suggests, Foucault believed power not at all inhibiting, controlling or coercive. Rather it is productive. It produces knowing subjects and the forms their knowing takes. It is not a substance held, won or lost. It does not inhibit essential freedom. Power is not held be some and wanted by others. Rather, power is a diffuse network of forces acting at all points. It is exercised rather than held. There is no innate freedom, and power can only be known through resistance. Our practices, our doings happen within the exercise of power, and practices of power are situated, defined by spatial configurations. Foucault's research especially engaged with spaces of institutional incarceration, as those most fully expressed how space, power and knowledge are related. In this he researched the emergence of modern medical spaces as spaces for confining the sick, asylum spaces as those confining the insane, and prison spaces as those housing the criminal.

Understanding illness, insanity and crime can be significantly developed by analysing the relations between spatial arrangements, the exercise of power and the subject positions that can be taken up within a spatialising apparatus. Especially important was Foucault's analysis of Jeremy Bentham's Panopticon prison, an ideal figure that distributes criminal bodies and surveying bodies (prison guards) such that effective penal reformation can happen. Neither prisoners nor guards were 'free' within the disciplinary frameworks of the panoptic apparatus. Our spatialising practices are influenced by power that is productive and not coercive. Generally, power is not seen as productive; rather we dwell on our resistances that

make power appear as essentially coercive, inhibiting, and possessed by the few at the expense of the many.

The daily activity of education is essentially situated in educating spaces of one kind or another, in which complex forces combine to influence spatialising, knowing and practice, which only receive reflective attention if they are somehow abnormal. The exercise of power, which is evident in actions, policies and in specific contexts, tends towards norms (discursive rationalities), normativity (rational techniques or technologies) and normalisation (defining appropriate conduct), all geared to correction. Hospitals have normalising procedures that define the sick and the healthy. Prisons have a normalising force defining practices of segregation and discipline. Schools have normativity with respect to how the conduct of conducts should happen. Yet bodies for the most part are pathological rather than normal with respect to procedures for normalisation, that is, it concerns [ethics] the kind of relation one has to oneself in contrast to external determinations of pre-conditioned normative resonances[10]. Hence the panoply of corrective measures in power's exercise, normalising relations of force, to produce, for example, life-long learners, or those fit to leave incarceration and re-enter 'society'.

Autonomous technologies of power—such as panopticism or ILEs—exist as apparatuses and take on the form of both spatial and social entities. These apparatuses, although not designed as devices for control or repression, constitute an exercise of power that is equally an enabler of freedom and opportunity as well as a means of encouraging self-enforced control, one's care of one's self through normalising procedures. This requires understanding strategies of political governance combined with implications of built space (spatial ontology) as well as the social dynamics of living cohesively without rigid forms of control—such as overt juridical authority or systems of policing. In working with these, Foucault was able to develop a rigorous discourse based on the effects of space and power. Yet, spatial configurations in themselves cannot resolve social problems. This can be recognised, for example, in the late twentieth century transformations of especially nineteenth century prison or asylum buildings into educational institutions, particularly those for the production of art works.

[10] Ethics concerns the kind of relation one has with oneself. The essential condition for the practice of ethics is freedom, the ability to choose one action, not another. Foucault makes a distinction between moral codes (which are simply collections of rules and precepts) and ethics. He suggests there are four aspects to how the individual constitutes him/herself as the moral subject of his or her own actions. The first aspect relates to the part of the individual which acts as the focus of moral conduct. The second aspect is what makes an individual recognise their moral obligations. The third aspect relates to the means by which individuals transform and work on themselves. The fourth concerns what sort of person an individual might want to be.

ILEs are technologies of power, mechanisms of governmentality. There is a spatial organisation to the design of a school that, at once, engages and disengages how people use its spaces. As a concrete structure that is more-or-less permanent, it determines how it can be engaged. It presents access to techniques of control or can be considered as a calculating means of directing how we behave and act. Yet, for the most part it is considered as that which facilitates, enables and produces effects of 'doing' education (Jackson, 2004), what Foucault named an apparatus of security. The exercise of power secures rather than disciplines, empowers rather than inhibits, emancipates rather than confines. This is essentially the difficulty in recognising its existence.

Pedestrian utterances

Michel de Certeau was a French Jesuit philosopher who died two years after Michel Foucault, in 1986. His most well-known and influential work is *The Practice of Everyday Life* (1984). Acutely aware of the work of Lefebvre and Foucault, Certeau's approach to questions of practice, power and the everyday was guided by an overarching distinction he employed, that defined strategy in relation to tactic. Briefly, strategic practices tend to those of official discourses, or the producers of our social relations, such as the technicians of space, whose vantage point on agency is a 'god's eye' view that objectifies relations (for instance, property bureaucrats at the Ministry of Education). Opposed to strategic practices of control are the tactics of everyday consumers, those who are not only subject to planning controls but also those who subvert and undermine the very rationalities of such controls. In his influential essay, 'Walking the City', published in *The Practice of Everyday Life*, de Certeau contrasted the overview of objectifying planning of a city, exemplified by street maps, city grids and building plans, to what he terms the 'pedestrian footsteps' of those for whom a city is a place of lived relations, where a street is not simply something named but a place of lifelong friends and memories.

de Certeau's concerns with the everyday, with power and with notions of practice at multiple levels are important in coming to recognise how schools, factories, shopping malls or prisons, work. The notions of walking and naming are significant. de Certeau emphasised that to walk is to lack a place, constituting a search for the proper. Names such as 'school' or 'classroom' or 'city' symbolise a final, yet indeterminate identity. In contrast, proper names are mysterious and tangible, untranslatable and intimate, shuttling between the anonymity of maps and the personifying of speech or steps. Strategic planning attempts

to deny local authority, yet is subverted by local practice. 'Doing education' intermingles strategies and tactics.

de Certeau's everyday of tactical resistances opens hermeneutic analyses to search for those often unstated though implied and discernible strategic powers constitutive of the normalising discourses of educational practices. When brought together with Foucault's analytics of power, or ontology of power, we recognise a resonance between strategies/tactics, and relations of force/subject positions as resistances. These may be further engaged within the cyclical and iterative analytics of Lefebvre, for whom spatial practices are caught between spatial representations, which are depictions of objective spatial relations, such as those of de Certeau's planners, that we all experience each time we reach for Google maps. Those spatial representations are transformed representations of space, how we in our singularities find all manner of meanings, or strangeness, in those locales encountered, what might be called, mental maps. Yet these two interact within practices of space whose agential powers are those of producing social relations themselves.

Thus while a school's facilities are well defined by the fire evacuation plans required for display in every habitable space, such diagrams of spatial dispersion say nothing about the myriad of stories that define the living relations of students, teachers and administrators who all 'do education' in this same facility, who may or may not take notice of the next fire alarm as just another drill, or the student who playfully sets off the fire alarm as a diversionary tactic in 'doing education'. In Chapter Six, I will be returning to these themes of practice, power and the everyday when discussing the data findings presented in Chapters Four and Five. My aim is to draw out the extent to which a spatial ontology underpins how architects, teachers and students depict their living while 'doing education', even when they do not explicitly reflect on such ontology, or precisely because they do not thematically reflect on it.

In the following chapter I discuss my methodological procedures for a phenomenological hermeneutic approach to data interpretation, as well as a case-study approach to defining my research participants, the data-gathering process, its coding and establishing of themes.

CHAPTER THREE

Research Methodology

RESEARCH APPROACHES

This study is guided by the following research question: **Do Innovative Learning Environments (ILE) constitute an agency for teaching and learning?** The primary aim of this research is to explore where the notion of agency exists in the design and use of Innovative Learning Environments. To bring into view a critical perspective on this phenomenon of agency, I chose to analyse the interrelated experiences (the voices/the lived experiences) of the designers, the school leaders, teachers and the students, arising from the development and occupancy of two New Zealand schools, designed and built as Innovative Learning Environments post-2008. That analysis has been guided by my understanding of spatial ontology, as discussed in Chapter Two, in particular, the three primary spatial pre-understandings (ontologies) of practice, power and the everyday. It is by these three that my phenomenological interpretations of 'doing education' emerge. This chapter details the methodological approach I have developed to gaining a depth understanding of the experiences of school architects and those occupying schools. That approach is qualitative phenomenological in its methods. It is in Chapter Six that I bring a *further* interpretative approach, via my emphasis on spatial ontology, to a depth understanding of the grounding agencies for 'doing education'.

Dealing with the challenge of interpreting and critically engaging with this data required a thoughtful research process, underpinned by a justifiable research approach. This chapter discusses the qualitative research methodology I used to capture, individuals' voices and narratives as a way of interpreting their lived experiences. A qualitative research approach is a method of inquiry that supports a variety of research designs so in choosing a design I focused on participants and what they could offer to the analysis of ILE. Thus, my research design included examination of two ILE's as a case study with in-depth interviews and focus groups in an attempt to capture and locate the essence of the experience of those participants. Experience is a conscious process and therefore the development of [interpretations] of the essences of those experiences requires an interpretative process where I [the researcher] sought to make sense of the participants' personal and social world. For this reason, I enlisted an underlying phenomenological paradigm as a way of understanding and sensitively engaging with the point of view of the participants.

QUALITATIVE RESEARCH

Introduction

> With all research traditions, there is no one way of doing research. (Ellis & Barkhuizen, 2005, p. 254)

Qualitative research traditions have their roots in work of cultural anthropologists and sociologists in the late 1800s and 1900s. The traditions became established with the work of the 'Chicago school' in the field of sociology, and in anthropology with the work of pioneers such as Boas, Mead, Benedict, Bateson, Evans-Pritchard Radcliffe-Brown and Malinowski whose use of fieldwork mapped its methods (Denzin & Lincoln, 2000). Denzin and Lincoln (2000) proposed that qualitative research originated from a complex historical field and charted a timeline that articulates eight historical moments that have triggered events in its development that not only overlap but simultaneously operate in the present. Within the wide field of qualitative research in education, Creswell (1998) charted the growth of critical perspectives during the 1990s driven by feminist perspectives and the need to better understand racial and cultural identity, and inequity.

Qualitative research is a contested term. Denzin and Lincoln (2000) claimed that the words, 'qualitative research' and 'simple definition' do not collate. Tailoring metaphors depicting the patching together of fabric (such as bricolage) are commonly employed to describe its use of varied but appropriate tools at hand (Creswell, 1998). Despite their reservations, Denzin and Lincoln did propose a generic definition, one that suits this research project:

> Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that makes the world visible. These practices transform the world...They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self...At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them. (2000, p. 3)

This definition reflects a desire for participant voice to be heard following ethical and moral concerns in research that is strongly orientated toward the impact of the researcher's

interpretation in transforming the world (Creswell, 1998). Lincoln (2010, p. 5) contended that researchers need to work towards: "new, richer, more complex, more authentic representations of those with whom we work." A core feature, therefore, of qualitative research for this study is that it is a situated activity locating the observer in the world, as my interest is in disclosing the experiences of those inherently connected to the different complex situations presented through the design and use of an ILE.

What follows explores in more detail the core characteristics in Denzin and Lincoln's (2000) definition.

Core features of qualitative research

Qualitative research is a situated activity that locates the observer in the world being researched. Therefore, a significant consideration is researcher positionality. Rhoads defined positionality as "the social position of the knower," adding:

> Questions of positionality are epistemological in nature in that they relate to how the knowledge is produced and how the knower comes to understand the knowledge... The knower is not removed from the knowledge but instead is fundamentally a part of knowledge construction. (1997, p. 10)

Questions of how the knowledge is produced include what the researcher has in common with the participants, a relationship often envisioned through "a deep and abiding dialogue with the other" (Madison, 2005, p. 8). Here Madison was referring to Bakhtin's (1981) metaphor of communion with the other, opening up the researcher to know the other more fully to engage in a relationship that locates [without bias or directed prompt] the phenomenological, as it establishes the essence of their experiences. Charmaz and Mitchell (1997) argued "we go and see and sometimes join; we ask and listen, wonder and write, and tell our stories, not necessarily in that order," (p. 194). My personal experiences of acting in roles and sharing essences similar to those of the participants [even the designers], presented challenges for maintaining an autonomous view but revealing the true meaning of their experience. I do believe however, my approach to the inquiry and effort to report autonomous interpretations in the subsequent reflective analysis give me something worthy and meaningful to say. Thus, it is important to "speak of the writer's voice from the standpoint of researchers committed to the vocation of using all we can of our imperfect human capacities to

experience and communicate something of others' lives" (Charmaz & Mitchell, 1997, p. 194).

Denzin and Lincoln (2000) took this even further (in alignment with phenomenological underpinnings), viewing the researcher and research participants as interactively linked in the creation of findings where the researcher becomes a 'passionate participant'. Even though this participation might be regarded as a pitfall, I regarded it to be an advantage, providing an opportunity to engage with deeper insight and to build interpretive analysis that could bring into view lived experiences of those participants inherently connected to the design and use of the ILE. Interpretive research makes it possible to present the researcher's own constructions as well as those of all the participants (Lincoln & Guba, 1994).

Qualitative research comprises interpretive, material practices that make the world visible. To capture data, I started with a semi-structured interview process as a way of providing an opportunity for participants to reflect, tell a story of their experiences, recapture their understandings and perspectives about how they felt and what was lived, understood, or misunderstood during the practice of designing or teaching and learning in the ILE. My goal in this qualitative phenomenological study was to provide an interview space that recognised the participants as co-researchers as analysing the meaning of an experience with the participant can be a valuable step in the analysis of the meaning (van Manen, 1997). However, even this approach has limits as the relationship of the interviewer and interviewee can often influence the retelling of experience and this is particularly pertinent when engaging in sensitive matters such personal practices of pedagogy. My personal experience suggested that teachers find talking about their practice confronting as practice involves personal beliefs, values and emotional attachments that is connected but also separate to curriculum and assessment expectations. This requires a shift from the conventional practice of asking research participants to generalise about their experiences, to inviting the interviewee to articulate their specific lived experiences (Brinkmann & Kvale, 2008; Langdridge 2007). As a way of engaging in phenomenological analysis I used these stories, as a means of finding significant meaning in the participants' life experiences.

Phenomenology as a theoretical perspective advocates the study of individuals' first-hand experiences of phenomena in their life world because human behaviour is influenced by the phenomena of experience rather than an objective, empirical reality external to the individual (Cohen, Manion, & Morrison, 2007). It enables the researcher to garner

meanings ascribed by individuals through the analysis of their language as spoken or written (Brinkmann & Kvale, 2008; Langdridge 2007). The phenomenological researcher thus considers the body in space and relations among people, and the lifeworld as it is lived by those whose lives are influenced or shaped by the phenomena of the lifeworld (van Manen, 1997). Hence the correlation in the findings provides discourse of analysis where notions of spatialities of practice and spatial ontology are inextricably intertwined in a complex interaction of the social construction and social production of space.

Flick claimed that

> qualitative research starts from a 'naturalistic approach to the world' and a great deal of qualitative research has an interpretive approach to it. But in many contexts, both are seen as something different on the levels of epistemology and methodology, which makes it difficult to simply combine 'interpretive naturalistic' in one approach. (2007, p. 2)

By examining the stories of the participants in their environment, I connect with a naturalistic approach to the world, but in realty I cannot re-present that world as it is. I engage with the participants in their natural setting to get a sense of their world, so that I can then engage in a process of interpreting their lived experiences as phenomenological qualitative discourse analysis. Denzin & Lincoln (2011) recognised that separate and multiple uses and meanings make qualitative research approaches difficult to agree on especially considering the wide variety of contexts to which qualitative research is applied. They also recognised, however, the complex interpretive practices underpinning qualitative research, bringing into view the purpose of engaging with interpretive phenomenology.

Phenomenology

Edmund Husserl developed phenomenology in the early 20th century, to provide an account of experiencing and of the phenomena in the world that are part of the human experience of those phenomena. Phenomenological analysis is also concerned with the less obvious layers of human experience (van Manen, 1997). There are considered to be two main approaches to phenomenology: descriptive and interpretive. Husserl's transcendental phenomenology was descriptive. Interpretive phenomenology was developed by Husserl's student, Martin Heidegger (Connelly 2010; Spinelli 2005), as an attempt to move beyond

the confines of Husserl's 'pure' descriptive phenomenology that focused on describing experiences. Interpretive phenomenology includes hermeneutics, which was strongly influenced by Heidegger and especially Gadamer (1976). Hermeneutic phenomenology seeks to interpret experience (Langdridge 2007; Laverty 2003), by, for example, critically reflecting on texts, such as transcripts, to move beyond the taken-for-grantedness of daily life, and to work towards isolating themes (van Manen 1997). Working with these themes, the researcher is interpreting the meaning of the phenomenon or lived experience through the voice of the participants. Gardiner (1992) summarised the active role of the interpreter in critical hermeneutic interpretation:

> The hermeneutic approach stresses the creative interpretation of words and texts and the active role played by the knower. The goal is not objective explanation or neutral description, but rather a sympathetic engagement with the author of a text, utterance or action and the wider socio-cultural context within which these phenomena occur. (p. 63)

Being concerned with the nature of human interpretation and understanding, hermeneutics allows participants to interpret what is perceived and to make sense of their perceptions (Ramberg & Gjesdal, 2009). Laverty (2003) clearly distinguished between descriptive phenomenology and hermeneutic phenomenology in terms of their ontological, epistemological and methodological frameworks. Hermeneutic phenomenology claims self-reflection as the standpoint where data is to be interpreted, using the hermeneutic circle which means that (a) all interpretation is influenced by one's previous experiences, world-view and personal history; (b) new perception and interpretation leads to new understanding and the creation of meaning, which (c) further shapes a person's beliefs, world-view and self-concept (Ramberg and Gjesdal, 2009; Weinsheimer, 1985).

Therefore, as Denzin and Lincoln (2000) suggested, researchers and participants are interactively linked in the creation of findings within the process of interpretation and interaction. As Jardin stated:

> Hermeneutic inquiry has as its goal to educe understanding, to bring forth the presuppositions in which we already live. Its task, therefore, is... to recollect the contours and textures of the life we are already living, a life that is not secured by the methods we can wield to render such a life our object. (1992, p. 116)

A critical hermeneutic phenomenological position informed this research. The stories of participants in this study reflect their experiences of very different kinds of educational environments to anything previously developed, especially in secondary school education.

Woven into the reflective experiences of participants in this study is their notion of culture, history and the power embedded in their values and practical and theoretical understandings of pedagogy and education.

RESEARCH DESIGN AND METHODOLOGY

Research Design

The research design of my study consists of three distinct moments each of which is described below: Focusing the study, engaging with the field, and writing and presenting the research text using data analysis. Although research design is often represented in the literature as a defined set of linear stages planned by the researcher, in reality, once the study has commenced and the data gathering begun, there is elasticity, There is often movement back and forth between those moments. The reason for this movement can relate to the re-examination of the questions, or potential disclosures during the research inquiry that require more in-depth encounters. This is evidenced in re-assessment and flexibility of the interview questions (especially in semi-structured interview situation), what is discovered during interview conversations, and as analysis and interpretation begins, further examination and interrogation of the data collected or what the literature exposed for further depth of analysis.

The literature review in Chapter Two led to some important observations. International studies indicate that the design of learning environments can affect the learning outcomes of students and teachers' pedagogy. Radically different spatial configurations for schools that depart from the single-cell classroom model, are a relatively new phenomena in education and disrupt educational practice. Focusing on the need to understand the reasons why decisions are made to design and build schools exhibiting significantly altered, open-plan spatial configurations and the impact these environments have had on educational practice, requires close scrutiny of those who design them and those who occupy them. Arguably, architectural designers are designing environments that are not fully understood by teachers who may feel that the new spaces are very difficult to work in. To analyse these practices required the application of a research design that enabled me to capture the experiences of the designers of the two case study ILE schools, and the teachers and students who then inhabit those environments. A reason for engaging in this research was founded on a notion to improve the interrelationship and partnership between the practices of design and

education, hence by adopting a phenomenological approach I was able to locate and interpret the shared experiences of the participants as a way of building an interdisciplinary discourse that contributes to future projects.

Focusing the study

This moment of the research addressed design decisions at the beginning of the study—forming the questions to guide the study, identifying the focus of the literature, determining numbers of participants, locating the participants willing to be a part of the study, gaining informed consent from those that agreed to participate, and selecting appropriate research strategies. In this part of the chapter, I describe, explain and justify the design of the study involving these two schools, and the methods of data collection and analysis. This content includes discussion of case studies, interviews, focus groups and pertinent ethical considerations, before introducing the participants. The site of inquiry was two new secondary schools, commissioned, designed, constructed and occupied post-2009. These environments were developed as innovative twenty-first century learning communities that were considered to be pioneering new approaches to support future focused learning.

Case study

Case study is an empirical inquiry that has, "investigated a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2003, p. 13). The frame of reference for this 'case' study is the design and development of the Innovative Learning Environment (ILE, henceforth), a radical change of spatial configuration in education.

Case study provides a research strategy for exploring key areas of interest, in a defined context. Merriam (2009) advocated the use of case study to seek meaning and understanding of an issue, suggesting it as having a distinct advantage over other research strategies for exploring phenomena that are embedded in everyday contexts (Yin, 2003). Case study design aligns well with interpretive methodologies (Creswell, 1998; Lincoln & Guba, 1985; Merriam, 2009; Yin, 2003).

Stake (1995) argued the aim of the case researcher is to "understand how the actors, the people being studied, see things" (p. 12). In doing so, the researcher draws from the 'multiple realities' of others, often vicariously, in order to gain insight into what is

happening (Lincoln & Guba, 1985). Ultimately, the researcher aims to articulate an interpretation of the case but preserve the various views of those who contributed in the form of rich, descriptive vignettes. Merriam (2009) claimed one of the special features of case study research is the ability to "illuminate the reader's understanding of the phenomenon under study" (p. 44), through discovering new meaning or confirmation of what is already known.

Case studies offer opportunities to researchers to use multiple sources of data (Ary, Jacobs, Razevich, & Sorensen 2006; Yin, 2003), deepening researcher understanding of the way individuals perceive their lived experience (Berg, 2007). Full and accurate descriptions of cases are possible once all case study data are subjected to systematic collection and analysis (Wilson, 2009). This rigour permits coherent comparisons among cases, and thus provides some level of general explanation, in addition to providing the possibility for study replication by other researchers (Berg, 2007).

Instead of seeking answers to questions such as "how much" or "how many," case study design is useful for answering "how" and "why" questions (Yin, 2003). Walsham (1995b) highlighted the value of interpretive case studies. In qualitative and interpretive case studies, the researcher is directly involved in the process of data collection and analysis (Creswell, 1998; Klein & Myers, 1999). The researcher and research participants are interactively linked in the creation of findings where the researcher becomes a 'passionate participant' (Denzin & Lincoln, 2000). While this aspect might be regarded as a pitfall, it provides an opportunity for researchers to gain deep insights into the perspectives of participants. Thus, the qualitative researcher "documents the [participant's] point of view and translates it into a form that is intelligible to readers" (Neuman, 1997, p. 72). Therefore, interpretive research makes it possible to present the researcher's own constructions as well as those of all the participants (Lincoln & Guba, 1985).

Lincoln and Guba (1985) suggested offering a vicarious experience for readers, by providing sufficient richness of detail so the reader could form a sense of personal construction. In support of providing a vicarious experience for readers, Stake (1995) suggested the use of vignettes, or brief descriptive exposés that are drawn from the context and experiences of others.

Ethics

Approval to undertake my study was granted by the Auckland University of Technology Ethics Committee in September 2014. Ethics relates to the moral conduct of people and is specifically concerned with what is morally right, or correct in the way people behave as individuals and towards others (Merriam, 2009). Research that involves human participants raises unique and complex ethical, legal, social and political issues. There are three main objectives in research ethics. The first is to protect human participants. The second is to ensure that research is conducted in a way that serves the interests of individuals and groups. The third is to examine specific research activities and projects for their ethical soundness, such as management of risk, protection of confidentiality and the process of informed consent (Merriam, 2009). It is important that the conduct of the researcher towards participants must, at all times, be transparent, and protective of the interests of those who participate.

As an interpretive, qualitative researcher, I can be considered to be viewed as being inside the research, so in my situation further ethical concerns relate to the protection of participants with regard to deception, exploitation and identification. I sought participation from persons able to offer insights that may contribute to new understandings in an area of interest. As this study relied on seeking the experiences and perspectives of others, there were a number of ethical issues concerning my role as a researcher that I needed to anticipate. Issues of power relations, disclosure of information and research beneficiaries were formally disclosed to the potential participants during the recruitment phase of the research (Appendix 7a, 13a). Throughout the research process I was watchful in maintaining participant privacy through nondisclosure of identifiable information in text content, including the identity of participants and their place of work. Pseudonyms replaced actual names and workplace names were generalised. In addition, the participants were given the opportunity to assess their interview data for accuracy and add or delete information to the text.

Despite being in the field of education for some time, and a senior lecturer at the University of Auckland I had no prior involvement with any of the school participants who volunteered to participate in this research. As a lecturer of teacher education, I had visited one of the schools previously to assess the performance of teacher trainees. This process was autonomous to the day to day running of the school. I had attended guest lectures from leaders of one of the schools at the University of Auckland. In the recount of the participants' contribution I have been mindful of maintaining a research integrity as

outlined in my ethics application and approval and in the research approach as described above.

Engaging with the field

My research aimed to examine Innovative Learning Environments (ILE) to analyse the design and teaching and learning practices as a means of addressing the question of whether they constitute an agency for teaching and learning, and thus required me to purposefully target ILE's (rather than traditional schools) as research subjects. This required gaining access to specific ILE schools, and schools where the designers of the schools would also agree to participate. The process of acquiring access to ILE's and access to the designers (architects) was a challenge. After approaching five schools in the northern region, where most ILE schools had been built prior to 2014, only two agreed to participate in the research study. Once the schools had informally agreed, I contacted the architectural firms to confirm they would also participate in the research. The selection of the architects was solely reliant of their practice of designing the two schools who volunteered to participate and thus was not a choice option.

For the purposes of my research, these two ILE schools were thus deemed to provide sufficient evidence to allow me to understand the hidden meanings and essences of participant experiences arising from the ILE designs and the way in which its occupants and users are prepared for, and practice in such an environment. The study was considered complex and highly contextualised. This was particularly so in regard to evaluating the influence of built design on pedagogy and learning. Furthermore, it facilitates multiple levels of analysis as the participants originate from differing professional foundations (figure 9).

The selection of participants within the chosen schools was purposive. Purposive sampling is a non-probability sample that is selected based on characteristics of a population (Miles & Huberman, 1994). I chose to use purposive sampling to ensure I could gather (as data) a rich sample of participant voice (human experience) from those closely connected to the design and use of the case study phenomena, the ILE. In this case the architects, who designed the physical space and school leaders, teachers and students who occupy the designed space; specifically, to enquire into how designers engage in professional and

collaborative practices. The defining characteristics of the various participants are detailed below.

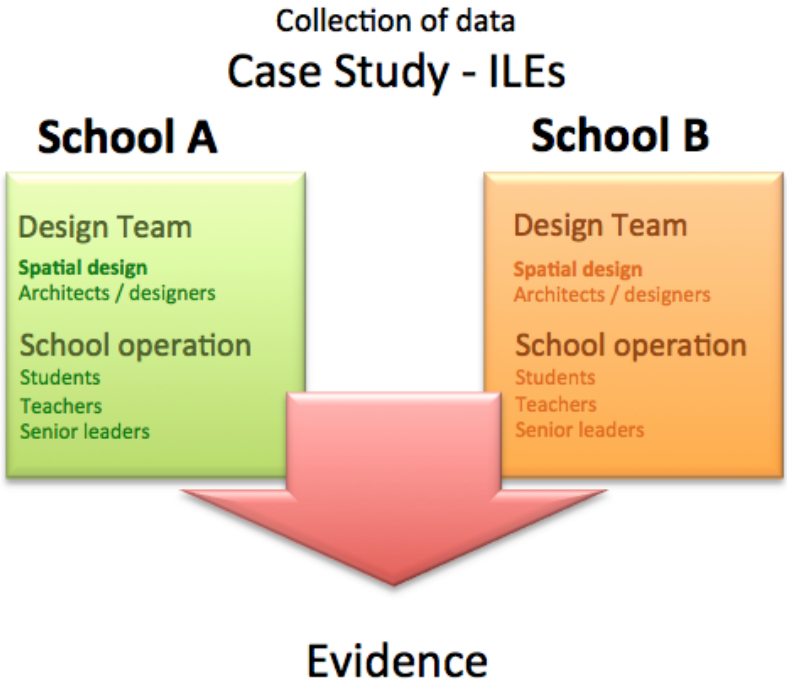

Fig 9. The Case is the design and development of Innovative Learning Environments. The schools are purposefully chosen as participants to examine the case and facilitate data collection.

Gaining access and consent

Sampling was purposive. I specifically wanted to obtain a broad range of participant voice from the schools. I considered this important as participants with different levels of responsibility, years of experience and/or career length potentially have different stories to contribute. Effectively there was no choice of participants from the architectural firms, although I did request participation with the principal architect for the design of each school. The criteria for sampling was:

School leaders x 2 (Principal, deputy principal/Director, co-director)
Criteria included:

- one principal and one other senior learning leader, or
- two designated senior learning leaders chosen by the principal

School teachers x 4

Criteria included:

- One teacher of long serving experience 8 years and over,
- two teachers with between 4-7 years experience,
- one teacher recently graduated (1-3 years),

teachers who came from different learning areas and years teaching experience were prioritised e.g. from a range of learning areas (core and optional e.g. English, Maths, Science, Technology, Design, Art).

School students aged 13 and over

Criteria included:

- Any student in the age range of between 13-19 and able to participate in all learning areas,
- those who wanted to contribute across a range of ages represented at the school, was representative of the communities population,
- only those who demonstrated an interest to participate in the study,
- those who had different learning area interests,
- students from a range of classes/home groups.

Architects/school design planner:

Criteria included:

- The principal designer of each school and the person who was the leading architectural authority for the project management of the structure.
- This person will also have been the conduit to the Ministry of Education Property Managers so as to produce the required spatial and educational outcomes for the project.

An invitation to formally participate in the research was forwarded in an email to the two schools that agreed to participate, with a letter of introduction (Appendix Five) and a description of the research topic with the specified requirements to participate. Participants (leaders, teachers and students) were given the opportunity to apply to participate in the research and once they had agreed to participate, a Participant Information Sheet (PIS)

(Appendix Six, Eight, Twelve, Fifteen) and Consent Form (CF) (Appendix Seven, Nine, Thirteen, Sixteen) were provided for each group of participants. After establishing the identity of the two architectural firms who were responsible for designing each of the two schools, I made contact by email and invited the principal architect (for educational facility design) from each firm to participate in the research study. The reason for interviewing members of the design team was to obtain an understanding of the designer's perspective on their design process for designing the school and their experience of working with educational professionals. Once they had agreed to participate I sent them a Participant Information Sheet (PIS) (Appendix Ten) and Consent Form (CF) (Appendix Eleven).

Interviews and focus group sessions were captured on a digital voice recorder and this evidence was stored for confidentiality in the primary researcher's home. Audio data was processed by means of transcription. A transcriber was used and a confidentiality agreement signed by that transcriber (Appendix Fourteen). The data retrieved is text (transcriptions) derived from interviews and focus groups.

Interviews

Primary data were gathered in this study by using individual semi-structured interviews with architects, school leaders and teachers. Selected students from each school participated in focus groups, which will be examined shortly. The semi-structured interview allows depth to be achieved by providing the opportunity on the part of the interviewer to probe and expand the interviewee's responses, (Rubin & Rubin, 2005). Alshenqueeti argued that "the value of interviewing is [that] it builds a holistic snapshot, analyses words, reports detailed views of informants [and] enables interviewees to speak in their own voice and express their own thoughts and feelings (2014, p. 39).

Interview participants were grouped as follows:

- Two architect designers responsible for managing the conceptualisation and configuration of the new schools—one participant from each of two architectural firms. My recording of data from the two architect participants was undertaken in one interview session with each participant, but because I have worked with these architects in a variety of educational projects as well as had informal discussions at times, I had often made notes about our conversations. With their permission, I have used some of those notes to add to the total analysis.

- Four school leaders: Two participants from each school; one female and one male. Each had one face-to-face interview. The participants consisted of one principal and three deputy principals. As it happened there was a mixture of females and males but this was not necessarily a requirement. Informal talks with some of those senior leaders have taken place since the initial interview and these have been useful during the continued writing up of the thesis. Later in the process I used these informal opportunities to test my developing conclusions and would write my resultant thinking straight into the thesis. There were email exchanges for data confirmation checks.

- Four senior teachers: Two participants from each school; both female and male. Each had one face-to-face interview. After the interview there were email exchanges for data confirmation checks.

- Two junior teachers: One teacher from each school with teaching experience of less than two years. Each had one face-to-face interview.

The semi structured interviews with the participants were guided with a list of prompt questions (see Appendix One to Four), which were used to stimulate conversation with participants to allow their interpretation of the influence of innovative design on teaching and learning. The semi-structured interview format enabled me to explore participant positionality and voice while critically evaluating their views and perspectives. As a qualitative researcher, I was interested in understanding the meaning my participants have constructed about how they make sense of their world and their experiences they have in the world (Merriam, 2009), and the use of semi structured interviews allowed me to achieve this aim.

Focus Groups

In the 1940s, focus group interviews were notably used to examine the persuasiveness of wartime propaganda efforts (Morgan, 2008), almost 40 years before focus groups were widely used in the social sciences. In bringing together people who share a similar background, focus groups deliberately use interaction to gather data and insights that would otherwise be inaccessible (Hughes & DuMont, 1993; Morgan, 2008). Group dialogue inherently fosters agreement and disagreement among participants, encouraging them to clarify or justify their statements. Morgan contended that they are particularly useful for

"hearing from groups whose voices are largely marginalised within the larger society" (2008, p. 352).

The focus group method was used in this study in order to gather up student voice, which is often unheard in research, and to gain an important perspective on the question of the significance of built environment on learning. The participants were as follows:

- Ten school students: Five participants from each school. The students were chosen with equal (as possible) gender representation, ranged from13 to 18 years of age spanning year 9 to year 13. There was no further contact with the focus group participants after the initial focus group session.

- Numbers were limited to five because larger groups limit the detail of some responses as participants have to share airtime with others. Conversely, participants in a smaller group may feel uncomfortable pressure to talk more than they would otherwise to fill dead air (Krueger & Casey, 2008).

The focus group sessions were 45-60 minutes. The focus groups were scheduled at a designated time and location (within the participants' own school) so that younger more vulnerable participants were able to feel more comfortable in their own surroundings and at a time suitable for the school. Even though pre-determined questions were used to prompt discussion in focus groups, the intention was to provide an opportunity for serendipitous conversation that allowed latitude to explore a wider range of experiences or establish unexposed concepts. Thus, focus groups for the student participants was a suitable choice of method, as the student participants were more comfortable to express, or not express, their views and opinions as they were familiar with their peer group members and surroundings. I expected they would be more likely to be honest and encourage each other to freely share their thoughts and feelings on the topic. I was mindful of allowing them the opportunity to tell their story.

Peek Road High School

Peek Road High School is a state coeducational secondary school that opened in February 2014. It is a secondary school built under a public-private partnership, whereby the school buildings are constructed, maintained and managed separately from the school

management by a private consortium. The school currently serves Years 9-12. The school had a roll of 450 as of October 2017

The public-private partnership (PPP) for the school was signed in April 2012, with the 25-year contract for the design, construction, maintenance, finance and management of the school buildings being let to the Learning Infrastructure Partners consortium. At the end of the 25-year contract (i.e. in 2037), ownership of the school buildings will revert the Crown. Peek Road High School draws its school community from areas of high socioeconomic status when compared to other New Zealand schools.

The area surrounding Peek Road High School is the result of extensive planning initiatives and a design strategy to create a sustainable and environmentally committed urban development. It is a place for the community to inhabit for generations to come; where the network of streets are a place for people not just for cars; where connecting streets and open space for recreation and access is important and a place where there is a provision for a truly mixed development in social and economic terms.

The site on which Peek Road High School resides, commands a significant presence on the spine road that snakes through the community. There is a permeability about the school's site with external features interconnected to nearby contemporary high-density style homes by a series of pedestrian walkways, cycleways and roads. A sense of close community and a village atmosphere is evident, and a local excitement about the look of the school. There is very little that resembles what a traditional view of a secondary school looks like.

Standing and looking at the building from the road, the first impression is that the length of the building has a dominating physical appearance with its modernist geometric shapes clad in contemporary and colourful long-run steel with some exterior walls covered in a skin of large commercial style wall panels. At a glance, there is a distinctive European modular chalet style look to the structures. The architect commissioned to forward a proposal for this building clearly articulated concepts that partially originated from research his studio had completed on European and specifically Finnish school design models.

The entire campus is under the single flat roof structure (with distinctive conic shaped ventilation installations protruding at various intervals) that runs the full length and width of the school, making moving between spaces inside the building easy and comfortable in all weather conditions. Entering this building challenges any pre-existing notions of educational

spaces and practices usually evident in secondary school environments. There are no narrow corridors, cellular classroom blocks, or segregated staff offices.

The outdoor areas are accessible from the lower floor and contained to one end of the building. The administration area, performing arts centre, gymnasium and a large café/lunch/gathering (that acts as a heart of the building) space visually connects the inside to the outside and upper and lower levels. A wide stair case (with the school's values applied to alternate steps) acts as a place for traversing ground to second level and as observed it is also a popular and valued relaxing, social or working area. The large spaces are filled with natural light from windows on either side of the building. At the top of the stair case is a designated staff area that has glass walls providing a visible connection to all on the first-floor landing.

The top floor of Peek Road High School resembles a shopping mall, with a wide mainstreet running the entire length of the building with a mix of large open flexible spaces and cleverly partitioned breakout spaces branching off each side. A defining conclusion about this 'lived space' is that this building is a significant departure from any previous secondary school design dominated by cellular classrooms, contained and isolated didactic teacher/class interactions, reflecting subject area dominance and curriculum delivery. To the average observer, there was an immediate awareness that previous encultured and embodied notions of teaching, learning and curriculum, as conventional practices of education (especially in a secondary school), had been significantly challenged by the design of this physical space.

In this school, the furniture is light and mobile and easy to move to form different configurations within the large open spaces. Here there are specialist facilities such as soft and hard materials, art, science, music and performing arts centres that have spaces that are more isolated because of the nature of the equipment and actions they support.

Peek Road High School Participants

Name[11]	Experience	Position
Kurt	Over 20 years	Principal architect
Neil	Over 20 years	School leader
Mandy	Over 10 years	School leader
Kirsty	Over 5 years	School teacher
Susan	Over 5 years	School teacher
Simon	Over 1 year	School teacher
Fraser	Over 5 years	School teacher
Matt		Student – focus group
Sophie		Student – focus group
Jeremy		Student – focus group
Natasha		Student – focus group
John		Student – focus group

Table 1: Peek Road School individual participants

Brennan Heights College

Brennan Heights College is a coeducational senior secondary school that was opened in February 2009, and was one of the first state senior secondary schools catering for students in Years 11 to 13 (ages 14 to 18) only. Most secondary schools in New Zealand traditionally cater for Years 9 to 13. As of October 2017, the school has a roll of 848 students, with a maximum capacity of 1300. The school roll has not grown as much as expected in the last four years. Brennan Heights College draws its school community from areas of high socioeconomic status when compared to other New Zealand schools.

Brennan Heights College is on the edge of a large site surrounded by low bush foliage with minimal open land for school sports fields and bounded on one side by a link road to local housing developments. To maximise areas for outdoor activities and sports facilities the

[11] Pseudonyms

building was designed to look upwards from the ground rather than sprawling at one level. It is a three-storied building hovering over a car park and bus drop-off area at ground level. There is a sense of security about this building as there is limited access from the street ensuring the open internal spaces are safely isolated where students can wander at will without necessarily having a teacher with them.

The first floor is separated into specialist areas specifically technology, art, science, music and a performing arts centre. There is a central core to the long building where an open glass bounded atrium area reaches two stories above a large café/lunch/gathering and similar to Peek Road High School, offers 'heart of the school space' that opens onto an outdoor area facing North where students can relax or converse. As part of the first-floor area there is a separated staff and administration space. All staff share this space including the administration team.

The second level is accessed by a wide industrial steel stairway that at the top opens out into a number of learning commons. Each learning commons has small break out facilities commonly known as 'fishbowls'. Windows border each side of the building and provide ample natural light with most light flowing from the northerly side of the building. The layout in these large open spaces resembles an environment that is flexible, adaptable and dynamic. In this school, the furniture is light and mobile and easy to move to form different configurations within the large open spaces. Seating and other furniture are moved regularly to form small communities within the space for different purposes. Here too, are specialist facilities such as soft and hard materials, art, science, music and performing arts centre that have spaces that are more isolated because of the nature of the equipment and actions they support.

Brennan Heights College Participants

Name[12]	Experience	Position
Ian	Over 20 years	Principal architect
John	Over 10 years	School leader
Tina	Over 5 years	School leader
Ryan	Over 10 years	School teacher
Dianna	Over 5 years	School teacher
Denise	Over 1 year	School teacher
Murray	Over 20 years	School teacher
Peter		Student - focus group
Jenni		Student – focus group
Wiremu		Student – focus group
Alicia Alex		Student – focus group
		Student – focus group

Table 2: Brennan Heights College: individual participants

THE PARTICIPANTS

The architects

The architects ('Ian' and 'Kurt') had been associated with new school design for as many as twenty-five years and have a significant history of working alongside the Property Management Teams from the Ministry of Education. Both were very keen to contribute to developing research information. Ian and Kurt were intent on applying their craft for the benefit of designing for educational purpose, confident in voicing their opinions, and supportive of the communities with whom they were engaging during the design process. Of particular interest, was the intentional educational criteria that the designers have used to develop the kinds of spaces that make up a modern learning environment and how they perceived learning happening within the spaces.

[12] Pseudonyms

The senior leaders

Four senior leaders from the two schools chosen for participation in this study, agreed to participate in an interview. Of value to this process was that the senior leaders from Peek Road School were relatively new to their positions, while the leaders from Brennan Heights College had been in their positions for up to five years. The senior leadership teams at each school had one principal, one associate principal and two deputy principals (see Table 2). At Peek Road High School (PRHS) I interviewed the principal and the associate principal. At Brennan Heights College (BHC) the principal was on a short secondment, so the deputy principals were invited to participate and they both responded positively.

Name - Pseudonym	Position	School
Neil	Principal	Peek Road High School
Mandy	Associate Principal	Peek Road High School
John	Deputy Principal	Brennan Heights College
Tina	Deputy Principal	Brennan Heights College

Table 4: Participants: School Leaders

The interviews took place during the school's regular hours of operation, and covered issues that would be part of their regular Leadership discussions. At both PRHS and BHC, I interviewed the two Senior Leaders individually in a private space connected to the administration area at times convenient to them.

The senior teachers

The senior teachers were identified by their number of years of teaching experience, in this instance beyond 5 years. The participants consisted of four senior teachers who were chosen for their previous years-experience and variation in learning area specialisations, from the perspective that their views about their experiences would be different. These teachers were considered to have had experienced teaching in previous versions of school design models before starting work in a ILE. Senior teachers were considered to be more likely to be able to recognise and comment on the variances between a previous model of school design and the design of the ILE.

Teacher participants from Peek Road High School:

Name - Pseudonym	Position	School
Ryan	Senior Teacher	Peek Road High School
Dianna	Senior Teacher	Peek Road High School
Denise	Junior Teacher	Peek Road High School
Murray	Senior Teacher	Peek Road High School
Kirsty	Senior Teacher	Brennan Heights College
Susan	Senior Teacher	Brennan Heights College
Simon	Junior Teacher	Brennan Heights College
Fraser	Senior Teacher	Brennan Heights College

Table 5: Participants: Teachers

The junior teachers

The junior teacher participants were considered to have had little experience in teaching and/or had no experience teaching in a school designed with single cell classrooms. In this instance, they were chosen because they had only been in teaching for up to two years.

The interviews took place during regular school hours, and covered issues that were part of their regular school discussions. I interviewed the eight teachers individually in a private space connected to the administration area at times convenient to them.

The students

Five students from each school with a mixture of females and males from different age ranges. The students were of differing age ranges from 13 – 17 years old and all participated fully in school learning programmes. I interviewed the students as a focus group in a private space connected to the administration area of each school at times convenient to them.

Name - Pseudonym	Year Level	Gender	School
Natasha	10	M	Peek Road High School
Jeremy	9	F	Peek Road High School
Matt	9	M	Peek Road High School
Sophie	10	M	Peek Road High School
John	10	F	Peek Road High School
Alicia	11	M	Brennan Heights College
Peter	13	F	Brennan Heights College
Jenni	12	F	Brennan Heights College
Wiremu	12	M	Brennan Heights College
Alex	13	F	Brennan Heights College

Table 6: Participants: Students

Data analysis

Kvale (1996) suggests choices available to the researcher regarding the form the transcripts of interview can take – verbatim transcripts that include pauses, emphases on intonation and laughter, or transcripts which merely summarise those parts of the interview that contain little relevant information. I chose to transcribe all interviews verbatim as often interpretation can be influenced by personal semiotic nuances of emphasis or inference. Once I had received endorsement of the interview transcripts by the participants, I made a summary of the issues arising from each interview, noting particular statements and phrases that illustrated particular issues, concerns or discoveries. I then began an initial coding of the data using a manual table infrastructure, seeking clarification occasionally from participants of various points or issues in the interview data by email or telephone.

Approach to data analysis

Qualitative data analysis in this research was based on the interpretive philosophy outlined at the start of this chapter, thus analysis was focused on examining the meaningful and symbolic content of the qualitative data. The aim of phenomenological data analysis is to

"transform lived experience into a textual expression of its essence – in such a way that the effect of the text is at once a reflexive re-living and a reflective appropriation of something meaningful" (van Manen, 1997, p. 36).

Hermeneutic research is interpretive and concentrates on the historical meaning of experience and the developmental and cumulative effects of on individual and social levels. Gadamer (1992) argued that hermeneutics is not about developing a procedure, but rather to clarify the interpretive conditions in which understanding takes place and suggested that understanding is reached with a 'fusion of horizons.' He viewed a horizon not as a single entity, acknowledging people's divergent beliefs and backgrounds (Vessey, 2009), but as a range of vision that includes everything seen from a particular vantage point within an experience. The 'fusion' develops from greater shared understanding between investigator and investigated. Weinsheimer (1985) believed that one's own horizon is constantly in the process of formation and hence there is a birth and growth of something reducible to neither the interpreter, nor the text, nor their conjunction.

Understanding is always more than merely recreating someone else's meaning so interpretation is critical to this process. Understanding and interpretation are bound together, (Annells, 1992). Questions are an essential aspect of the interpretive process as it helps make new horizons and understanding possible. Questioning of the collected data opens up possibilities of meaning and thus what is meaningful passes into one's own thinking on the subject, being transformed into a communion in which we do not remain what or who we were.

This interpretive process is achieved through a hermeneutic circle. Heidegger (1927) developed the concept of the hermeneutic circle to envision a whole in terms of reality that was situated in the detailed experience of everyday existence by an individual. It is used to describe the process of understanding a text hermeneutically and refers to the idea that one's understanding of text as a whole is established by reference to the individual parts and one's understanding of each individual part by reference to the whole. Neither the whole text nor any individual part can be understood without reference to one another completing the circle. This circular character does not make it impossible to interpret the text, rather it stresses the meaning of text must be found within its culture, historical and literary context. Engaging with the hermeneutic circle thus means moving from parts of the experience to the whole of experience and back and forth again and again to increase the depth of engagement with the

understanding of texts, (Annells, 1992; Polkinghorne, 1983). Kvale (1996) viewed this end of spiralling through a hermeneutic circle as occurring when one has reached a place of sensible meaning, free of inner contradictions, for the moment.

Questions of approach to data analysis must necessarily involve questions of an ontological and epistemological nature. For Guba and Lincoln (1994), researchers must make explicit both their ontological and epistemological assumptions before embarking on any research project. Answering questions related to "the form and nature of reality and, therefore, what ...can be known about it" (p. 108) is the first step for researchers approaching a problem. Thus, the interpretive researcher's ontological assumption is that social reality is locally and specifically constructed, "by humans through their action and interaction" (Orlikowski & Baroudi, 1991, p. 14) affirming that "social reality is based on people's definition of it" (Neuman, 1997, p. 69), as evidenced in their interview conversations.

Guba and Lincoln (1994) asked, "what is the nature of the relationship between the knower or would-be knower and what can be known?" (p. 108). This epistemological question must be answered in concert with an ontological view. My epistemological assumption (as the interpretive researcher) is that "findings are literally created as the investigation proceeds" (Guba & Lincoln, 1994, p. 111), and explicitly recognises that "understanding social reality requires understanding how practices and meanings are formed and informed by the language and tacit [environmental and cultural] norms shared by humans working towards some shared goal" (Orlikowski & Baroudi, 1991, p. 14). Taking this into consideration I consider myself to be an interpretive researcher ready to place my preconceived notions of design or education to one side to ensure an accurate and detailed account of the research question.

Data analysis: Methodological considerations

Seidel (1998) introduced a metaphor for the analytic process: he regarded data analysis as a symphony based on three elegant but simple notes – noticing, collecting, and thinking. Qualitative data analysis is the range of processes and procedures used to move therefore from the collection of qualitative data to its conversion into some form of explanation, understanding or interpretation of the people and situations being investigated (Denzin & Lincoln, 2000). The analytic challenge is thus to establish findings by reducing data,

identifying categories and connections, and developing themes, so as to offer well-reasoned, reflective conclusions.

Inspired by Seidel's (1998) symphonic metaphor I see the process of analysis as iterative (repeating cycle), recursive (returning to previous point), and 'holographic' (understanding changes as the position and orientation of the viewing system changes and retains the same object of focus). Analysis has therefore been an iterative process throughout the data collection, and I have been frequently 'in conversation' with the data (Shank, 2002) to provide a transparent narrative of participants' voice. Miles and Huberman (1994) claimed that "words, especially organized into incidents or stories, have a concrete, vivid meaningful flavor" (p. 13). I have made meaning of the data by valuing stories that narrate personal transformation within the context of the exemplar learning environments.

Reliability and validity, generally regarded as important in quantitative research, have less relevance in qualitative research, where these concepts are replaced by an emphasis on good judgement and responsible (ethical) principles and the examination of findings for evidence of rigour, trustworthiness, credibility, and authenticity (Berg, 2007; Denzin & Lincoln, 2000; Patton, 2002). The data I collected related to the concepts, opinions, and values of participants in their naturalistic social context and was collected during individual interviews and focus groups which were transcribed from audio recordings into text. The transcribed interviews were checked and returned to interviewees for a final comment. The data were approached without presuppositions and a genuine attempt to accurately advance understanding of human organisational phenomena implicated in the design and use of flexible, innovative learning environments, seeking to accurately interpret the participants' perspectives and experiences (Miles & Huberman, 1994). My further moral obligation as a researcher was to use accepted forms of data analysis to select, interpret and develop emergent themes from their dialogue and reflect their experiences in narrative form to ensure their voice is accurately portrayed as a valuable contribution to the discussion on the ILE phenomena.

Data analysis: Initial coding strategy

Thematic analysis is a qualitative strategy that takes its categories from the data, and was the approach I took in analysing the text, searching for recurring themes and concepts. This is a demanding process: "Identifying salient themes, recurring ideas or language, and patterns of belief that link people and settings together is the most intellectually challenging phase of data analysis and one that can integrate the entire endeavour" (Marshall & Rossman, 1999, p. 154) and, "subjective as it is, thematic analysis is demanding on the personal resources and intellectual art and craft of the individual researcher" (Kellehear, 1993, p. 39). The following table 7 represents my systematic analysis of the collected data, and is a modified version of Lincoln and Guba's (2000) strategy to maintain authenticity in interpretive analysis:

Lived Experience – reality	Stages of data analysis					
Data collection Participant interviews and focus groups Architects Teachers Leaders Students	Immersion	Understanding	Abstraction	Synthesis and Theme development	Illumination and illustration of phenomenon	Integration and critique of findings
	Organising the data-set into texts Iterative reading of texts Preliminary interpretation of texts to facilitate coding	Identifying first order (participant) constructs Coding of data using column based table system	Identifying second order (researcher) constructs Grouping second order constructs into sub-themes	Grouping sub-themes into themes Further elaboration of themes Comparing themes across sub-discipline groups	Linking the literature to the themes identified Reconstructing interpretations into stories	Critique of the themes Reporting final interpretation of the research findings

Table 7: Systematic stages of analysis (after Lincoln & Guba, 2000).

Once data confirmation checks were completed, I used a thematic strategy to translate the data, roughly into meaning or topic chunks, and displayed these a series of columns in a table inserted into a word document. As there were large quantities of data, I named segments with a label and wrote comments in adjoining columns. This helped me to categorise and summarise the responses in order to try and understand the meaning. By assigning themes or codes, I was able to use an iterative process to refine the main themes of the data. After initial scanning of the data I looked further, to create finer categories, later adding slightly more blended or patterned comments.

Shaping findings

I refined the topics as categories and used these categories to create themes that would shape the findings from the two case study contexts to be presented in in Chapters 4 and 5 (see Table 8).

The architects	The school leaders, teachers and students
Familiar relations The architect's milieus • Multiple projects • Design influence from non-school projects • Evaluating previous school design projects • Who drives change Master planning and design process • Design influences local and international • Different project types • Schools like a village or town • Defining spatial connectivity • One building holding everything • Design evaluation Ministry of education • Introduction • Ministry design briefs • What the Ministry does not do • Properties division • Curriculum expertise Community consultative processes • Composition of Boards • The functioning of Boards • Tensions on Boards Teaching and learning cultures • Conversations with teachers • Teacher resistances • Students and Parents • A joyful experience	School leaders • Background of leader participants • Shifting the paradigm Qualities required of teachers in an ILE The experience of teaching in flexible learning spaces • Relationship of space and pedagogy • Teaching in an ILE • Collaboration Learning in a flexible learning environment • Principles of twenty-first century learning • Independent learning • Curriculum and curriculum integration • Real world learning: principles and benefits • Assessment and learning Students' views Meeting community needs

Table 8: Data Categories

SUMMARY

To summarise, this chapter has described the methodology and research approaches I have employed for analysing data collected from participants involved in designing and occupying two Innovative Learning Environment case study schools. It has considered research approaches, research design and methodology, the research context, participants and data analysis. The chapter opened with an outline of the core features of qualitative

research that are relevant to this research, especially focusing on phenomenology and hermeneutics as a way of interpreting interview transcripts originating from participants in two different disciplines, architects and educators/learners. The case study strategy provides a structure with which to bind the multiple sites of sources of data. The thematic structures elicited and developed through an analytic process in this Chapter emerged in Chapters Four and Five as a means of presenting the findings, which is the subject of the following two chapters.

CHAPTER FOUR

The Architects

INTRODUCTION

An important contribution to this research on innovative learning environments is to adopt an enquiry position that takes into account the milieu of facilities design, design processes and perspectives of the lead architects on school design projects. Historically most research into ILEs appropriately emphasised investigating teaching and learning perspectives and teacher and student responses to being immersed in newly designed facilities. While this is valuable, it tells only a part of the entire account of how these facilities come about, and the perspectives on their agency by those most instrumental in their actualising. For this reason, an integral component of this study on the agency of learning facilities on teaching and learning becomes what we are able to learn from the principal architects who developed the two case-study schools.

In analysing and interpreting the data, I have arrived at a series of major themes and sub-themes. As described in Chapter Three, the data comprises semi-structured interviews with key personnel involved in each of the two case-study schools, as well as focus group interviews with student cohorts from each school. This chapter engages with interpretation of the interview transcripts resulting from discussion with each of the principal architects for the schools. Interpretation and the eliciting of themes aim to arrive at some of the underlying strategies that determine the perspectives of the architects, in this case. Interpretations are neither true nor false, nor are they correct or incorrect. Nor is interpretation finished once and for all. The thematic structures elicited and developed in this chapter as findings rather alert us to interpretative possibilities and depth critique of the case-study schools. That depth critique will be developed in my discussion chapter, following a second findings chapter dealing with those who inhabit innovative learning facilities—teachers and students.

The interpretative themes to have emerged from analysis of the architects' transcripts fall into five major categories. Each of the architects engages each category differently. At times one architect will have much more to say regarding a theme than will the other. With some there is uncanny coincidence. With others, there are nuanced or marked divergences. The two school designs are very different though at some fundamental design-level coincide in intent. The two design firms are different though these two principal architects have quite coincident histories in school design in New Zealand. Each of the five main themes have a raft of sub-themes, again interpretative in nature rather than exhaustive in definition. The five themes are:

(i) Broadly, perspectives offered by the architects on their design milieus

(ii) Master planning and design process in developing a school design

(iii) Perspectives on the Ministry of Education as design commissioning client

(iv) Perspectives on the community of interest, especially the role of Boards of Trustees and Establishment Boards

(v) Teaching and learning cultures as the key practices for which design is developed

An initial observation is that the two architects interviewed were not blinkered or exclusive in their concerns. They appeared informed and open concerning not only design process for schools, but also current debates in pedagogy, the structures and limitations of the New Zealand Ministry of Education, teaching cultures in schools, and Ministry-driven community structures that govern the establishment of new schools and the ongoing management of existing schools. The thematic structuring of this chapter reflects this broad engagement, coincident for each of the architects.

The architects—Kurt and Ian

Kurt is the lead design architect for the Peek Road High School, while Ian is a principal architect in one of New Zealand's leading architectural firms, and lead designer for Brennan Heights College. Each architect presents perspectives on his design profession, on design precedence and international contexts, on specific developments in New Zealand, in which they were involved, and on school design typologies. They were aware of each other's work. In fact, one of the opening comments by Ian was to ask if I was also interviewing Kurt for his expertise on innovative school design. Both architects have been involved in school design since the late 1990s, and each of them has produced the outstanding exemplars of innovative learning environments in New Zealand. Kurt was commissioned in the 1990s to design the first new school in New Zealand for the Ministry since the 1970s. With this project, the Ministry disregarded any notion of design typology, or established design precedence. This gave Kurt significant opportunity for innovation. Ian's initiation was a little different. He approached an independent radical school offering to develop a master plan for them in exchange for the school commissioning him to do the detailed design when they were ready to progress. This opportunity equally afforded Ian a change to explore significant innovation in school facility design.

Each of these architects traces his interest in education design, at least in the context of these interviews, in part to familial relations. I think this is more than coincidence. Family touchstones seem important in developing perspectives on educational frameworks.

Familial relations

In terms of familial relation, these were factors not elicited or probed for in conversational questioning. Ian, on a number of occasions, discussed one of his children currently at a traditional and high-achieving school. This is a school whose educational philosophy, teaching practices and facilities designs are all at odds with the kinds of projects Ian is commissioned to develop. Ian especially emphasises that his child is not achieving well in this environment, with the suggestion that the student would be better served in leaving school and entering a trade apprenticeship. Ian compares this pedagogical environment he experiences as a parent and the more expansive encounters in innovating learning environments. Schooling affects parents intimately and in terms of aspiration, just as each of us has a schooling history marked by happiness or crisis. Ian, in fact, briefly discusses his own education experiences at school in terms of resistances to innovative learning approaches: "... one of the lines I had when I was dealing with a new Board group or the parents is: Hey, look, when I was a kid at high school I never ever once remember opening a door into a classroom seeing those thirty odd scratched desks sitting there in a grid, thinking I am going to do some good learning today." Ian's own recollections of uninspiring education facilities genuinely informs his approach to design, and commitment to the project of school innovation.

Kurt does not address his children directly, but affirms his considered engagement with education philosophy and commitment to understanding school management. He has a cousin who is a senior researcher in education in Australia, with whom he regularly discusses educational philosophy. This is important for Kurt in providing depth perspective on what he recognises as the crucial role he currently has in changing schooling in New Zealand. More pragmatically he is on the Board of Trustees of his children's school, providing him with both insight into community-based school managements, as well as a capacity or potential to give direction to facilities development and pedagogical directions.

THE ARCHITECTS' MILIEUS

Multiple projects

Architects tend to work on more than one design project at a time. With large design firms, it is likely that firm partners, such as Kurt and Ian, will be responsible for multiple projects that move across functional categories. Hence, while Kurt and Ian are specialists in schools' design, each having up to twenty-five years' experience in this field, they also engage in domestic scale design, commercial office design and industrial building design, as well as urban planning scale approaches to spatial design. Their approaches to school design are not only informed by working in other design categories. Such approaches are often enriched by understandings of urban-scale modelling, or the most contemporary approaches to commercial office design. This was especially emphasised by Ian when discussing the design of Brennan Heights College (BHC).

Design influence from non-school projects

Prior to working on the design of BHC, Ian had completed the design of an important and innovative commercial office building in Auckland, one that aimed at addressing contemporary and future understandings of how the very notion of work is understood in highly innovative ICT environments. From the point of view of the design proposition of this office complex, the future of work is open and flexible. In this regard, the office block and its internal configurations were also open and flexible. This project was important for Ian when asked to work on a new school building. His question was: what kinds of spaces will these children experience that will prepare them for work environments of the future? Ian wanted school students to experience it now, clearly spelled out in the following comment:

> I will just come back one step. We think everything is connected. We were doing some workplace stuff here [a commercial office project] It's a very interesting interior layout, about having no offices, with everybody together, an interesting kind of central—heart space—in it. And we said to the school Establishing [sic] Board of Trustees something like that would be really cool for the school. So we had this idea of this simple box—bring them together—then they would have a workplace. Then there was the question about students who are working in workplaces like this now when they leave school. What are we doing as designers and

> Establishing [sic] Boards of Trustees, what are we doing to prepare our kids to work in these places? And so, you know, all the 'ducks', the 'cards' started to line up. And it, sort of, fell into place.

Architects deliver more than spatial configurations for possible functions. They deliver ways to practice. Ian described a potential influential moment that was inspired by the important commercial office project, and, his passion to ensure students are prepared for their future world of work. He had a belief that, as a dynamic functional space, it would offer a place where many spatial configurations could easily be elicited and where there were opportunities for students to build meaningful connections [between learning areas], and it could easily work for the design of a school. Kurt was equally emphatic about the notion that spatial design does not just distribute spaces for things to happen. Design orchestrates practice. Innovative design innovates practice, in this case teaching practice.

Design approaches

More generally both architects engaged in in-depth discussion in describing, comparing and critiquing a range of school designs with which they had been involved, freely admitting where compromises were made or results were less than wished for. Kurt had just given a long reply to a prompt question on the relation of teaching and design in modern learning environments. After quickly comparing a series of different school designs he had been involved in, at primary, intermediate and senior levels, Kurt then moved to something quite revealing in terms of his basic approach to design. He suggested he starts with structures—by which he did not intend master-planning structures, design structures or even building structures. He meant something very different:

> What are the structures through which you teach? Why do you do that? What is it really doing for students by doing that? How do you organise a bunch of teachers in a Leadership Team, you know? How do you prepare your students for the future? What is the future you are preparing them for? All of these fundamental questions—and it is quite staggering that even today schools don't respect those questions. They don't engage very much in Professional Development around those questions.

Kurt had switched from discussing buildings comparatively to discussing his consultative approach with teachers for his design research. His orientation is to how teaching practices relate to student agency.

Who drives change?

Both Kurt and Ian regarded design as a key agent in orchestrating significant change to practices of learning though saw fundamental obstacles to the potential for change in educational structures. These obstacles ranged from the Ministry's approach to commissioning schools, to the role of Boards of Trustees in being the client body, to the lack of preparedness of teachers to work in flexible learning spaces. Each discussed his role as designer in change agency. Ian was exuberant in suggesting:

> It is an exhilarating place to occupy...we love talking to [teachers] about what they want to do and we love finding pathways through things...turning the problem into a positive...And they go, 'yes, you do that!' I don't quite know how we do it—it is a bit of magic.

Kurt shared a different perspective, indicating that in conversation with teachers, he gets little in response, so he recognised that it is up to him as designer to provide the concrete means to innovating practice:

> ...the first question I ask when I go to a school is: Tell me about what you are doing? Tell me what you do? Why do you do it that way? And mostly you get kind of wide-eyed stunned silence. ...I could then articulate to them what I thought they should be doing. And suggest that here there is an opportunity for change.

Later in the discussion Kurt added that it should not be the architects who are driving change. It should be the Ministry and schools:

> Usually what you get from my experience is the architect advocating change and driving and trying to push it ... well, if there isn't another protagonist then it has to be the architect. You know the Ministry should be the protagonist, and I think the school should be the protagonist for that change as well. But what are the design processes that drive design approaches to innovating learning facilities?

MASTER PLANNING AND DESIGN PROCESS

Design influences local and international

Though each of the two case-study schools have quite different design approaches, due especially to site conditions, they have an uncanny coincidence in terms of a basic understanding of master-planning at the level of design concept. Each architect engaged, throughout the interview, in discussion on his approach to design and planning. As mentioned above, Ian especially referenced a highly innovative commercial office project and both architects brought up many schools they have worked on throughout New Zealand over the past twenty years. Both also mentioned international contexts for education design, particularly Finland and Sweden in the 1990s, in terms of significant innovations in pedagogy and in school facilities design. Kurt noted in an introductory response to a prompt to address innovative learning environments:

> Yes...this is a phenomenon [that] has been [in] evidence...globally for a long time...for the best part of twenty-five years...I started to kind of see it when I looked at what was happening overseas especially in Finland, the schools over there. They were designing and building very different kinds of school environments to ones you saw anywhere else in the world.

Later in the interview Kurt returned briefly to consider the importance of the latest global thinking on education, but especially in the design context of what a particular school's environment offers or challenges. He emphasised that the key questions need to be what does this school, in this community, with these demands require, not just now in the present but in the next twenty to fifty years, for the life of a school facility: "What is important in this particular place? Now this is all the kind of stuff that could be worked on. You know, what is the latest kind of global thinking on educational thinking and educational delivery?" Kurt somewhat laments the importance and vision that in his view, the Ministry has neglected, of those "basic questions" in the context that it seems only the architect is aware of them.

Yet, further into the interview, Kurt again references international design contexts, noting that North America is the most traditional, with greatest inertia to innovation. In Europe only Norway and Finland seemed to him to offer genuine innovation as most of Europe, too, is traditionally oriented. And New Zealand is "way ahead" while Australia is "starting to

get the gist of it now" though are slightly behind New Zealand, notwithstanding the fact that we still have a long way to go. This is a very interesting position for Kurt to take, given the enormous criticism of both architects in their struggle to achieve the required support for architects in achieving successful facilities design.

Ian had similar criticisms of the Ministry in terms of support, and these are discussed further below. In terms of international design contexts, Ian made greater reference to Australian design innovation, perhaps suggesting that in Australia things have moved further and faster. Comparisons are of new Zealand and Australia are difficult in some respects as education is State-based in Australia with greater differences in policy across the country, but also there being a much larger population, resulting in a greater number of schools and school commissioning or renovating projects. Ian explained that a Board of Trustees for one of his school projects went on a research trip to Australia to look at some innovative school designs.

Different project types

The architects made it clear that there are two quite different design approaches they need to consider. One is for major renovation to an existing school facility and the other is a new school facility. As the Ministry's policy is now for implementing innovative learning facilities for all school building, both models implicate issues of change agency in spatial and curriculum structures. The architects emphasise that existing schools present the greater challenge. An existing teaching body, with its often entrenched approaches to pedagogy, a Leadership Team who may be resistant to innovative facilities design, a Board of Trustees with conservative aspirations for change, and a two-year design and build timeframe most often lead to difficulties. As Ian noted, "if you have got an existing school that you are re-completely vamping, that's a huge shift". By comparison, a new school design happens prior to appointment of Leadership Teams and teaching staff. The options for innovative facilities design and curriculum reform are then left to the Establishment Board of Trustees.

Although when "you are doing a new school, you can hand pick people who are up for the journey" (Ian), the reality of the Ministry processes, as Ian discovered, means that there is considerable hand-holding by the architects of the Establishment Board. Ideally, suggested Ian,

> you need a visioning team who goes in before—a year before us and then they need to go in a year after when the building is finished as well to help ...[and see] what's working and what's not working.

Similarly, Kurt said, comparing major renovations to new school design, as the

> design...and construction process [of a retrofit] will take two years...[the staff has] plenty of time to rethink, do...professional development...[so when they]...move into this environment...[they] are ready...With new schools it's easy because you...develop the design without anybody there.

Kurt suggests that in this later scenario teachers 'buy into' the new environment and therefore have a greater commitment to see it working. They also discuss 'failing' schools as the toughest, schools considered to have deeply persistent dysfunctions, linked to a complex of factors. Generally it is inferior facilities that are blamed, though from the architects' experience, it is not facilities failures but socio-cultural management issues. These are the most difficult because innovative facilities design or innovated curricula do not actually address the root issues.

Schools like a village or town

Both architects spoke of overcoming entrenched master-planning approaches that, traditionally, opted for dispersed buildings across a site, with external toilet block facilities and conventional practices of keeping students outside during breaks from class. In countering these entrenched approaches, both architects spoke of a whole-school approach, having the entire school, its faculties, facilities and leisure spaces all under a single roof. This shifted entirely the dynamic for relational inter-connectivity between staff, between students and between staff and students. Kurt notes in response to a question concerning the basic design premise for PRHS: "Why did I design the school that way? One of the big challenges in large schools is a sense of community. So most large schools in New Zealand are very dispersed—there are buildings dashed all over the place." Kurt had already discussed his fight "for years" with the Ministry on policies regarding external toilet blocks and keeping students outdoors during breaks. He also mentioned something in passing about the sparse, almost non-existent brief from the Ministry for the new school. Though highly critical of the brief, he pointed to some "deep thinking" embedded in it,

deep thinking about embedded notions of teaching hubs, made up of around cohorts of 130 students and four or five teachers. Kurt continues:

> [Peek Road] came out of a couple of really simple, naïve questions. And those questions are: What if a school is a bit more like a village or a town? What would that be like? If you think that, or imagine that schooling will continue to evolve and change—how would you design a school that would allow that to happen?

And he described how he engaged in design thinking at that point adding:

> How do you make a space or a set of spaces where students can learn, where they can relax, where they can socialise together? How do you have a school where the space is big enough in the school to maybe have the community in the school? ...If you have one big building, you know, all of the layout inside is completely separate from the structure, you can reconfigure that over the course of weekends, for example.

Ian emphasised a design approach to the school as a village by drawing out the pragmatics of connectivity—keeping functional relations in contiguity or adjacency. For example:

> Arts and drama should be close by. And there should be adjacent performance space ... food tech close to performance space so they could actually use the kitchens to feed the auditorium. Those sorts of things just become sort of obvious things because it is about making good connections. If you have good connections people will use stuff more.

Ian was significantly motivated in the design process of BHC by one particular meeting with a representative of the commissioning client, the Ministry of Education:, "she said it would be much easier if it was like an office building and you could just shift partitions." This encounter resonated with a conversation he had with the Ministry a year earlier, on connectivity "We just put all that activity in one building."

One building holding everything

It is at that point Ian backtracked to discuss the innovative office facility, picking up on the Ministry's 'unlocking' of the project via a commercial office typology. However, as with

Kurt, Ian went on to discuss a notion of the whole school community as a village, defining the 'heart' of that village community in ways that coincide with the innovative office project:

> And we always like the idea with any school—we would ask ourselves here, what if we had to draw a little heart—where would you put it on the school? And you know it is like a village of learning—any school. And you can get a disconnected village or a connected village. And you know the heart of [Brennan Heights] is that whole sort of central area where the food, the café is.

Significantly, Ian considers all schools to be village-like, recognising that a community's functionality or cohesion may in vital ways be enhanced or destroyed by spatial design. For Ian, the design configurations of creating learning hub groups of about 130 students, and placing these in conjunction with optimised functional connectivity, will enhance communitarian encounters. Crucially, the school, under one roof, can locate its centre and its heart, with all facilities and faculties co-existing.

Similarly, Kurt focussed on segmenting a whole-school population into smaller groups: "I could see the idea of organising students into groups of 120 with four or five teachers ... they could break down professional segregations." In this regard, Kurt seems to extend the logic of groupings of students into hubs further than does Ian. Kurt's thinking takes him to a more fundamental structural and regulatory functioning of a school's governance. These differences will be further drawn out in the discussion chapter.

Design evaluation

Both architects mentioned in passing typical frameworks for post-occupancy evaluations of newly constructed facilities. Ian discussed this indirectly, in terms of something that was lacking from the Ministry in terms of a 'visioning team' that would precede the design phase of a project and work in a school after occupancy to assess how a facility's potential is being used. This is further discussed below. Ian also discussed the issues of timeframes and budgets for design projects, including the false economies in budgeting a very short timeframe for the design process itself, along with a lack of evaluation, except in terms of performance of building materials or physical characteristics. The actual innovations are not evaluated.

Kurt addressed POE directly, enumerating some key features:

> Yes, I have done quite a few of those...Firstly is the physical aspect, you know, how has it survived? Has it been maintained, and all that stuff. I guess for me what is more interesting is: How is the space working? Is it succeeding; is it delivering what it needs to be able to in terms of teaching and learning?

Kurt regarded the significance of this process in light of what one learns about what to do in the future or to avoid doing. From his experience of working with the Ministry Property Division, he suggests that any POE concerns itself strictly with building performance in terms of materials, structure and maintenance. Kurt's approach to evaluation is exceptional in this regard.

MINISTRY OF EDUCATION

Introduction

The role of the Ministry of Education was noted earlier when both Kurt and Ian have discussed the design process and their respective on-going engagement with school facilities design. Both architects have experience of engaging with the Ministry over the past twenty years and both have come to understand the strengths and limitations of the Ministry. The Ministry's role in school design is complex and multiple. As the owner of state schools, the Ministry commissions facilities design but also sets in place the education policy objectives of the government of the day, covering aspects including curriculum policy and schools' administration. Architects enter this network of responsibilities, having to negotiate multiple levels of decision-making and responsibility. The current theme considers a series of distinct sub-themes discussed by the architects when mentioning the Ministry. These refer to its commissioning of design briefs, the parameters of the role of the Ministry, the role of its Property division, the Ministry's role in curriculum policy and development along with its impact on school facilities design.

Ministry design briefs

In discussing BHC, Ian stated bluntly:

> The brief of [BHC] was 1300 [students], 13,000 square metres and build it in a couple of years. ... That was it. It was about two

> paragraphs of that and then it had about twenty pages of how we are going to, or we will sue you if it doesn't work out alright.

Although the Ministry of Education provided no criteria, Ian reflected on the freedom of having no fixed design typology. Kurt's experience in regard to PRHS was very similar: "No, you get no brief...we were told there is an end date, this is how many square metres we want you to build and that is how much it should cost". Effectively, the Ministry allowed his firm to design the school it wanted to design.

What the Ministry does not do

From the Ministry's viewpoint, it is the Board of Trustees drawn from a school's neighbourhood community that irons out a working brief with an architect. What, then is the overall role of the Ministry? Both architects responded to this negatively, in terms of deficits in the Ministry role. The architects fully expected the Ministry to be engaging in research into educational facilities, having genuine expertise in relation to the efficacy of innovative learning facilities, along with genuine expertise on curriculum innovation. The architects sought such advice, and were sufficiently informed to recognise the expert advice they were not receiving. There was no curriculum expert they could turn to and no Ministry-initiated or supported research into innovative learning facilities they could draw from. The genuine expertise, by default, resided with the architectural firms themselves, in the accumulated knowledge and school design practice. A second deficit was the failure by the Ministry to provide what Ian called a 'visioning team', mentioned earlier. If minimal research on the part of the Ministry implies a crucial gap in knowledge by which the architects can develop depth understanding of relations between educational practices and facilities design, then the absence of a visioning team demonstrates that the Ministry does not understand change management. Both architects genuinely felt they were thus responsible to develop a detailed understanding of the relations between educational philosophy and innovative facilities, and to help all stakeholders manage significant dislocations in moving from traditional spaces to innovative facilities. Kurt emphasised:

> Well, there is nobody doing this research. You know the Ministry didn't do it, the Ministry, bless their hearts you know, they are very dedicated to obviously running the schools. But nobody seems to be—that I knew of obviously—looking into teaching practice very much. There are a few researchers, notable ones, such as Hattie, and those guys who were doing sort of outstanding

> work but it seemed to me as an architect the question always remained: What does that mean in terms of how you teach and the environment in which you teach?

Kurt later emphasised that it should be the Ministry driving, or steering this change, in concert with schools. Though the 'learning' in all of this for Kurt seems to be the architects, who mostly did this steering. His voice expressed anguish as he stated:

> I said we need some power, some leadership or somebody with some educational vision or experience to come along and help us with the change process, help articulate what that vision for change shouldn't and could be with the school, so that we can support that, and the design of the school.

Properties division

Both architects discussed the role of the Ministry's Properties Division in the overall development of facilities design, though they each had different emphases. The Ministry devolves responsibility for working with architects to community based Boards of Trustees, which will be discussed in more depth below. The Ministry assigns someone from its Property Division to a Board for consultation with the Board and commissioned architect. This, in the experience of the architect participants, was the Ministry's key input to new facilities development. Both architects emphasised the limitations to this, though also acknowledged the contribution of someone with genuine expertise in Ministry policies and practices concerning facilities.

The definition of a new model for educational delivery, according to Ian, "was driven entirely by Property people. The Property people had an idea that was the way we should be going." Ian was clearly astounded by this realisation on his part, that the division managing school facilities was the driver for change: "I was under the completely misguided impression that there were some curriculum gurus [involved]... It's completely driven by Property people. It is staggering!

Kurt, too, regarded the Property Division as the Ministry's driver for facilities innovation, though had some reservations:

> No, I don't think they [Curriculum people] have ever been involved with one [design project] in my experience. So, Ministry's Property people are involved ... there's a whole group of them and they are very knowledgeable. There is a new group of them now that is distinctly lacking educational knowledge. There is quite a challenge I think because they don't know if an outcome is good or not. They couldn't look at a design and say if this is actually forward thinking or it is not forward thinking.

Kurt's words must be understood in the context of the Ministry commissioning design firms to produce designs for new or renovated facilities. Kurt had already emphasised that, while many design firms are fully capable of producing "pretty" buildings, which is to say well-resolved buildings, with innovative materials finishes and a sense of design innovation, these facilities are without genuine merit with respect to addressing innovations in educational delivery. They are really little more than traditional silo facilities. From Kurt's vantage point, Property Division is important in defining if a design goes ahead. Yet it is not capable of making a good judgement on whether a facility provides educational innovation:

> They [Properties] will wander around and ask you questions like: Have you any flat roofs that might leak? Ok, there is a focus on leaky buildings and we will worry about the pragmatics stuff if we have to. No one ever wanders around or rarely wanders around and is able to still understand teaching practice that might happen in this space. Those discussions rarely, rarely happen.

From the point of view of both architects, the Property Division ensures the design of facilities meets physical specifications, is durable and capable of a maintenance regime that can be kept within prescribed budgets. While this remit meets due diligence requirements, it does not meet the requirement for full due diligence with respect to a depth understanding of how curriculum innovations and facilities innovations actually work.

Curriculum expertise

As with the Ministry's role in general, curriculum expertise is marked by lacunae or lapse rather than by positive commitment in developing a design team for new facilities. There is curriculum expertise in the Ministry. It was instrumental in developing the guiding 2007 New Zealand Curriculum document as instigating impetus for a Ministry directive for all new facilities to be along innovative lines. Kurt's expression is "two worlds" in explaining the relation that seems to exist in the Ministry between Curriculum and Property: "I think

though my observation is that Property was very separate from Curriculum. They are two worlds in the Ministry and one is not informed by the other from what I can see." For Kurt, Property is concerned with risk management; cost estimations; and time management. Yet Curriculum is concerned with the directions in new curricula, open and flexible futures, in many respects exacerbating 'risk' with respect to defined outcomes in education. There is no conversation between these two notions of risk assessment, however, except for those instigated by the architects.

Ian noted that the Ministry seems to now to be increasing its focus on modern learning practices rather than modern learning environments, seeing a strategic move in emphasising teaching practices rather than facilities with teachers. Prefiguring the shift in usage from 'MLE' to 'ILE', he suggested that 'MLE' had become "a bit of a—not a dirty word but it is—I need to get down to the bottom of it but they are talking about MLP—Modern Learning Practice." The implied emphasis here possibly prefigures a swing in Ministry to curriculum issues rather than property issues. If the architects may have experienced little by way of genuine Ministry support for providing direction in school design, then who or what, provided that direction?

COMMUNITY CONSULTATION PROCESS

Composition of boards

Much of the interview discussion with both architects returned repeatedly to the role of, or interactions with, Establishment Boards of Trustees. The architect participants mentioned their positive engagements with Boards but also obstacles, resistances, and in one instance a Board divided irreconcilably. In its 'Tomorrow's Schools' reform of the 1980s (New Zealand Department of Education, 1989) that devolved school governance to the local communities that schools serve, the Ministry of Education recognised the importance of schools serving and responding to the micro-cultural differences of differing suburban communities, in consideration of ethnicity, socio-economic determinants, and resource capabilities. As both architects emphasised, when schools undertake major retrofits, or are new builds, Boards of Trustees will be supported by the Ministry's Property Division. Specifically in the case of new school designs, the architects worked with Establishment Boards of Trustees, which was in place up to the time a new school has an election in its community for a permanent Board of Trustees. Among the tasks of the Establishment

Board included the appointment of the Principal, and subsequently, the rest of the senior leadership team. These appointments occur after the school is commissioned and designed.

Kurt directly referenced community and community partnership in his interview. The notion of community is central, in terms of thinking of a school as a village or cohering community composed of segmented learning hubs, but also in terms of a school being a hub for a suburban community. Kurt raised questions not only regarding the environmental issues for the school he designed, and its community but also in regard to the on-going future and long-term sustainability of the school and its community. What was more pressing in the immediacy of the designing process, however, was the Establishment Board with whom Kurt had to consult in developing a school design. He bluntly stated that the "communities don't know anything about teaching", likening their knowledge to that of "a mechanic's apprentice [who knows little] about a complex part of a car." This situation exists, he reasoned, because "Establishment Boards typically [consist of]...the local accountant, the local lawyer...a doctor...a teacher from another school and...an ex-principal who knows he has got some spare time." In other words, the Establishment Boards are made up of well-meaning volunteers with little wider educational expertise.

The (dys)functioning of Boards

Given this lack of knowledge of curriculum reform or innovation, or facilities innovation, the Establishment Board may require educating. Meanwhile the board members are too pre-occupied with getting the school structures in place, and hiring the school executive: For this reason, there can be and usually are tensions on a Board. With the new school, PRHS, there were disagreements about the design, and these tensions spilt over into obstructive behaviour, Kurt recounting an episode in which a Board member dug his heels in around the very notion of mixing science and technology curricula. This attitude obstructed thought pathways towards some of the core drivers for flexible learning practices and facilities. These resistors demand proof that innovative curriculum works:

> "Show me where it has happened before." This is one I get all the time. "Show me the exam results and a school where that kind of environment, where that kind of teaching is happening. Prove it to me. I don't want to be an experiment!" So, I've had that for twenty years now.

For Kurt, there are no experiments anymore. Facilities innovation is now mainstream, though many have to catch up. When Boards have "very conservative elements [mixed with] more forward looking [ones, the result is a]...split...Board", which is a "tragedy" and enormous waste of money".

Ian too experienced a split Board. He was addressing his basic concepts for BHC with the Establishment Board, advancing his notions of the learning village having a heart, and they "... spun out. Half...saying this is fantastic and the other half were saying...it won't work. There was a mutiny", and half resigned. Ian persevered, and introduced to the Board what he called the "stretching exercise," a part of the evening where he showed a series of design precedence, what he called "some cool stuff" not necessarily school designs at all. This opened their horizons for architectural developments and design thinking. In a similar vein of horizon-shifting, the Board travelled to Australia to see some "pretty cool building...So, they had a bit of confidence from what they had seen on their trip to just sort of push the boat out of there."

Ian too found Establishment Boards to be somewhat haphazard in their composition, a "rag-tag bunch." He suggested the Ministry should have a "professional board group" though he acknowledged that the Ministry wants Boards to reflect the community While Ian and Kurt discussed the role of Boards of Trustees in some detail, perhaps their most sustaining discussions concerned their engagements with those who inhabit schools, namely school leaders, teaching staff and students. It is in this arena that they found the greatest resistances but also the most encouraging directions.

TEACHING AND LEARNING CULTURES

Conversations with teachers

Both Ian and Kurt mentioned their discussions with teachers. Ian spoke highly of teachers, and was genuinely respectful for what they do—people who "care about what they do...[and seek]...a good outcome." Ian was especially positive about the value of conversations generally, mentioning on a number of occasions how conversations with teaching staff led to design resolutions. Design happens through genuine consultation and design breakthroughs come from those most intimate with the problem field.

> we love teachers and we love talking to them about what they wanted to do and we love...finding pathways through things...turns the problem into a positive. And it is such a joyful kind of thing, you just look and listen and talk ...

Kurt, who appeared to have a stronger educational philosophy background than Ian, was less exuberant, though equally emphatic on the necessity to work closely with teaching and executive staff. Ian's ideal starting point in developing a design concept, noted earlier, would be "structures," namely the perceptions teachers have of their work, and importantly the possibilities and limitations they see. Kurt indicated, however, that this process is difficult due to the unreflective nature of teachers, who are not encouraged by their schools to question. Furthermore, resistance comes from teachers themselves who have invested their lives in particular approaches and are not prepared to reinvest in another kind of future. Nevertheless, Kurt works with a school's leadership team to "push a bit harder" and attempt to see the alternative vision he is able to articulate, through design.

A critical limitation identified by Kurt in having discussions with teaching staff on the kinds of configurations they might want, is their emphasis on "what they need in terms of space." Instead, "they should be articulating what they want to do with [that space]." This led Kurt to conclude that "it is pointless getting a brief from the teacher [whose sole interest is]...the storage and where the sinks are."

Kurt realised that teachers are caught up in the micro-practices of their everyday lives and are unable, or rarely able to have a conversation on a larger aspirational framework, such as: "...how would you collapse a traditional curriculum structure that you have in your school today?" If general teaching staff were not able to offer Kurt sufficiently reflective

engagement on pedagogical change by which he can bring architecture into play, for Kurt school principals and leading teaching staff are equally problematic. He was scathing of principals on Boards, who "feel it is their prerogative to tell you how big their office is going to be." Kurt questioned this desire for traditional configurations, and indeed, for traditional governance structures:

> Why have you got offices? Why can't you build practice on what you are suggesting students should be doing? Why can't students see what you are doing? Why can't students be engaged with you in running the school? Why can't what you do form part of their learning?

This is what Kurt means by asking questions about structures rather than spaces. Disconsolately, he suggested that most school leaders cannot answer these questions. They, like the teachers, resort to the micro-managing issues of their everyday, concerning the need to make phone calls, or privacy to get work done. Kurt likes to start conversations with teaching staff, as he soon realises who he is in conversation with, and "what their thought processes are going to be about innovation and change and how malleable they will be to it."

Teacher resistances

There are other kinds of resistances, apart from those just mentioned, that both architects discussed, resistances that represent lost opportunities, or the simple refusal by a school to go down the pathway of innovation. Both architects admitted they are not always successful in achieving what they see as genuinely possible. Ian provided two examples of different school design projects where the desired outcomes were challenged, with a positive result in one case, and a negative in the other. In the first, a traditionalist Science teacher simply refused to acknowledge that flexible facilities and curricula enable teaching, and who told Ian modern teaching and learning was "a flash-in-the-pan [that wasn't] going to happen." There was a surprising reversal, however. Ian's recommendation to the Senior Leadership Team to visit a range of new school projects to be better informed led to an epiphanic change of heart by the senior Science teacher, who elected to move to a newly built innovating learning facility. In Ian's words, "... he was an exhilarated open kind of person. It was incredible."

The other example revolved around the request by a school executive for Ian to design a 'Modern Learning Environment', a term they presented in capitals. Ian's initial master planning presented a big open environment. The executive team was aghast, however, as what they wanted was a cellular classroom typology, and their notion of 'Modern' was 'new', not 'innovative' or 'flexible'. For Ian, cellular classroom facilities can be done well—"look pretty cool"—but they cannot do what flexible learning facilities can do. As he persevered with this project, Ian encountered the Head of Maths, who could not see how having mixed maths classes in the one big space could work, saying to Ian, "if we have all these kids in the same connective environment, you are going to get a year 9 kid who has heard the year 13 maths happening over there, all the way through." He encouraged the school to visit BHC to see what could be done, and encouraged the Head of Maths to at least telephone the Head of Maths at BHC, but these requests by Ian were declined. This was a missed opportunity for Ian, which Kurt had referred to as "an enormous waste of money."

As Kurt lamented, even with learning environments designed for more radical change, the space is not being used to its full potential. This is because, in schools there "are little centres of power and centres of knowledge", though, he believed, these are becoming increasingly irrelevant.

Students and parents

It is surprising how little students are referred to during these interviews, given that innovative school facilities are ultimately provided for students. Both architects had indicated their awareness that student concerns are uppermost in developing change management, mentioning their own children and their personal experiences of schooling as a child in reference to outmoded practices and facilities. Nevertheless, direct discussion with students at schools does not seem to feature in Kurt's design consultation processes. Ian did, however, refer to a number of projects predating BHC. In one case, the architect's team thought they wanted some student input, the most useful of which came from a serendipitous meeting with some female students, whose ideas were incorporated into the final design. Coincidentally, one of the students who contributed to the design decisions in a second example, has ended up working in Ian's office. In a third design project, they invited a group of students to discuss what works, and what does not work. Ian found the students "incredibly frank and open...and one message we got out of that discussion was that kids like little nook spaces to tuck into."

Another voice that was barely mentioned during the interviews with both architects was the voice of parents of students. They had a brief mention in terms of possible members of a Board of Trustees. As well, both architects recognised having to carry parents along with change innovation, and both seemed aware of parental resistance to 'experimenting' with their children's education, and the possibility of parents withdrawing students from schools committed to project-based learning. One of the few references comes from Ian in the context of the Ministry not taking the reins with respect to the broader community response to innovations:

> ...you have to inform the community. You have to bring them on board and actually educate [them] if they are going to do a significant rebuild at the school, they need to get their parents in the room and talk to them through that stuff.

A joyful experience

Both architects questioned the dour and regulated nature of traditional schooling and cellular buildings, and asked why school cannot be a place of happiness. Ian contrasted the experience of walking into a flexible learning environment and a cellular classroom environment. The sense of a joyful experience emerges in this contrast:

> You go into the new block, the kids—it is like a zoo; they are everywhere. And you tiptoe through them like penguins in the Antarctic. They don't even know you are there. That is kind of disconcerting because they, sort of, they're just onto it. They appear to be so on-task and sort of engaged...You go into a cellular classroom, come in the door and every single person turns around to see who is coming into their classroom...a contrast of engaged—maybe not so engaged.

Kurt related more philosophically, by questioning the core responsibilities of teaching. "Why isn't a teacher's core responsibility to make sure every [student] is incredibly happy and engaged and excited to be there?" Instead, so many teachers and schools disengage students. Kurt recognised that something fundamental is at stake with these questions. Like Ian, he could see differences upon entering traditional schools or innovative environments. "The environment is a big part of it".

SUMMARY OF KEY FINDINGS

The data provided by the architects is rich and complex. Surprisingly, it engaged issues that move far beyond the actual design processes for arriving at a school facility. Both architects were acutely aware of their pivotal and mediating role, the tacit and explicit knowledge they have of schooling, curriculum structures, curriculum innovations, school design innovations, critiques of traditional school facilities and teaching approaches. Perhaps most telling is the concern and conviction of both architects with respect to educational futures, in facilities whose working life will be thirty to fifty years. How do schools design flexibly for open and changing futures? How do schools accommodate the acceleration of change? Below is a summary of key issues that have emerged in analysing transcript data to elicit findings.

(i) Buildings or people

> We have found that has been the toughest thing; it's been the aspect of change has been the people, not the buildings. (Kurt)
>
> We talked about the heart space and the Establishment Board; spun out. (Ian)

The architects recognised that while it may be straightforward to design or re-design facilities that will achieve innovation or flexible learning delivery, the ultimate design is for occupancy and use. The genuine obstacle is in innovating practices of occupancy.

(ii) Default experts

> ...we go to these schools to talk about their project and they haven't got a clue. No one has been to speak to them and so suddenly it is up to us, so we are teaching them about MLE...we're obviously not bad at what we are doing in terms of that [educational] message, but I said [to the Ministry people] it is not our job. (Architect, BHC)

In terms of defining change agency, both Ian and Kurt recognised that, somewhat by default, they were the ones who were driving innovation. Though Ministry is affirmative with respect to innovative facilities, they do not take a cohesive lead. It ends up being the architects who are most informed during the design consultation process with innovative learning practices as well as innovative facilities design.

(iii) The Ministry's role—Two worlds

> I think there could be improvements in quite a few areas. I think firstly, the Ministry could easily take more responsibility in setting pedagogical directions. You know they have the New Zealand Curriculum, but it is a document that you can interpret in lots of different ways, and schools do. (Kurt)

> I think, though, my observation is that Property was very separate from Curriculum. They are two worlds in Ministry. And one is not informed by the other, from what I can see. (Kurt)

> It is completely driven by the Property people. It is staggering. (Ian)

> You can't get pedagogical change out of a bit of natural light you know. (Kurt)

Perhaps the most sustained discussion for both interviews concerned directly or indirectly the role the Ministry takes up, or the role the Ministry abrogates. The greatest criticism was levelled at the divide between the Ministry's curriculum expertise and its expertise in facilities management. Both architects felt they were let without appropriate consultative frameworks or research into innovations in learning and teaching to correlate with the evidence they had obtained through school design over twenty years.

(iv) The Ministry—Guiding directions

> [Ministry] is a bureaucracy—they have been incredible in terms of allowing the innovations...they have allowed. I mean it could have been quite different. (Kurt)

> It is all classroom-based until you...This Ministry, they need to get everyone in a room and say: Hey, does anybody know what's going on out there? (Ian)

Kurt acknowledged the extraordinary position the Ministry has taken, in acceding to a fundamental commitment to flexible learning facilities and curricula. The benefits of devolving decision and responsibility to communities is also recognised in terms of community-based relevance and decision process. There remains, however, the need for Ministry to take a more decided overview commitment to seeing the design process through, especially with what the architects termed a Ministry-based "visioning team" experienced in school change management that would precede a design team, oversee professional development and guide occupation of new facilities.

(v) Design consultations

> It is an exhilarating place to occupy. You know it is because ... we love teachers and we love talking to them about what they want to do. (Ian)

> And so it is pointless usually getting a brief from the teacher. (Kurt)

> And there was one of the messages we got out of that was that [students] like little nook spaces to tuck into. Well, if you didn't ask about that you would never have got that little moment. (Ian)

Kurt and Ian presented quite differently when discussing consultations with teaching staff, students and parents. Ian seemed to have a very positive attitude, or at least one that saw consultation as the medium by which design happened, or breakthroughs in design thinking happened. This was the case when discussing talking with teachers, principals and students. Kurt found greater obstacles, though perhaps approached the basic questions of design differently. Where Ian referred to spatial solutions, unlocked by those with whom he is conversing, Kurt does not aim to discuss spatial solutions with staff but rather how they radicalise structures: what they do or what they might want to do. He regards teachers primarily as unreflective, at best, or a resistive and obstructive change agent at worst.

(vi) A joyful place

> I don't know how we quite do it. It is a bit of magic. (Ian)

> [The students] get swept along in this sort of rush of enthusiasm of about what is going on. (Ian)

> The environment is a big part of it. (Kurt)

Both architects express a strong aspiration that school can be a joyful place, a place where children will be happy. For Ian, it is something he sees enacted in the change agency of innovative learning facilities. Kurt suggested we need no longer consider these flexible environments as 'experiments', and is frustrated with those who still doubt what has been twenty years of innovation on his part, where the question of happiness as a fundamental and challenging precept is at the base of any design process or change agency process.

CHAPTER FIVE

The Schools

INTRODUCTION

Having analysed the interpretive data from the school designers in Chapter Four, I now place an emphasis on analysing the interpretive data from the people who inhabit the innovative learning environments, teachers and students. Investigating the teacher and learning perspectives and the teacher and student responses coupled with the investigation of the school designers completes a valuable account of the investigation of the innovative learning environment as a new phenomenon in education, and gives voice to those who have been embedded in the practices of creating and making the innovative learning environment a working model.

As developed in Chapter Three the data comprises semi-structured interviews with key personnel involved in each of the two case study schools. This chapter engages with interpretation of the interview and focus group transcriptions resulting from the discussion with the school leaders, teachers and students. The series of major themes and sub themes from the transcripts are interpreted phenomenologically and the discussion is drawn out hermeneutically from the data. The themes are elicited interpretively from the data.

The interpretation and the eliciting of themes aim to arrive at some of the underlying strategies and philosophies that determine the perspectives of the leaders, and teachers in this case. As with hermeneutic methodology, interpretations are neither true nor false, correct or incorrect, nor is interpretation finished once and for all. Instead, the thematic structures elicited and developed in this chapter as findings signal the interpretive possibilities and depth critique of the case study schools. That depth critique will be developed in the discussion in chapter 6.

Each participant whether a leader, teacher or student engages in each category differently. One leader or teacher from the interview session, or student from the focus group interview sessions, at times, will have much more to say with reference to a theme than will the other, such is the nature of data that is elicited from semi structured interviews and focus group discussions. But each has had the opportunity to reveal their perspectives and discrete differences in how they have approached working in an innovative learning environment.

Because the design of the two schools is very different, the leaders and teachers will be divided by the way in which they engage with those differences in the two school designs. At some fundamental level, however the divergence in the school designs emerges as a catalyst

for approaching educational programmes with a similar intent. The chapter contains six themes with some containing sub themes. The six themes are:

- School leaders
- Qualities required of teachers in an ILE
- Leading and teaching in flexible learning spaces
- Learning in a flexible learning environment
- Students views
- Meeting community needs

SCHOOL LEADERS

Background of leader participants

As indicated in the literature (Beetham & Sharpe, 2013; Benade, 2017a; Bull & Gilbert, 2012; Moore and Lackney, 1993; Nair, 2002; Taylor, 2002; OECD, 2006; Washor, 2003; Wolff, 2002; Woolner et al., 2012) effective leadership of innovative learning environments is the key to their success. Choosing people with very different skills and knowledge than expected in a more traditional school environment is important. The literature clearly indicates that good leaders place significant emphasis on change management, relationship building, adaptability, the ability to dismantle and rebuild previously held notions of education and learning, and encourage innovative pedagogy. What follows is an interpretation of the nuance of differences there are between the leaders of the two schools. The normal structure of leadership in New Zealand secondary schools is the Principal, then a number of deputy principals as required by the size of the school. At the time of the interviews for this research study, the principal of Brennan Heights College was on secondment, so two deputy principals were interviewed. At Peek Road High School, the principal and deputy principal were interviewed.

- Peek Road High School (PRHS)

Neil was appointed Principal of Peek Road High School (PRHS) a year before the school was to be completed. He had significant experience in schools serving low socio-economic areas, and had developed and fine-tuned specialised programmes for students who found learning challenging. He was proud of his ability to form close relationships with the community and set up innovative practices to help capture the interest of students who would otherwise disengage with school and learning.

Neil had completed a Post Graduate Diploma in Educational Leadership and described the study as instrumental in his development of new ideas for programme development and delivery. With his experience of working in a challenging community with high rates of suspensions and non-attendance, Neil was particularly focused on generating different ways of making school a safe and interesting place to learn.

Mandy had gained a degree in a core subject and trained as a teacher. Previous to the Deputy Principal (DP) position at PRHS, she had been a DP at a smaller rural college where the principal held strong views of changing educational approaches to meet the needs of the community. She had spent twelve years as a DP and described a moment in her career that made a difference to the way she approached education. She was reinvigorated and further inspired (to make a difference for students who found learning challenging) when her principal returned from a sabbatical and announced that the school should change to longer learning blocks (not the traditional 50 or 60 minute periods) and implement learning advisories (building a stronger learning relationship with each student).

She vividly described how this change enabled students to engage in deep enquiry, lifting attendance and student achievement. For Mandy, it was a very powerful learning experience. The experience also made her realise that changes such as this were a huge challenge for other staff members less inclined to embrace change, and that change is something that would not happen overnight. Her research and work during that time in professional learning was, she felt, of significant benefit for moving to the position of DP at PRHS.

- Brennan Heights College (BHC)

After gaining a degree in a core subject and training as a teacher, John (Deputy Principal) started his teaching career as an assistant teacher in a community college in the South Island of New Zealand that was at the time considered to be an alternative/progressive type of school. After leaving that school John moved north to a private college in Auckland before being promoted to a Head of Department (HOD) position at Brennan Heights College (BHC). He is committed to further study and at the time of the research, was undertaking a Master's Degree in Educational Management. He was a member of the establishment team employed one term before any students were enrolled. He considered this to be a valuable experience because he was able to work with three founding Deputy Principals, whom he considered to be progressive thinking people. He described that he

was thus able to contribute to the development of ideas for the vision of the school as well as curriculum constructs. He applied for the role of Deputy Principal after three years of being in the HOD role when one of the senior leadership team members decided to leave. John had been in the position of Deputy Principal for two and a half years at the time of the interview.

Tina (Deputy Principal) was temporarily appointed to one of the Deputy Principal positions to provide leave cover. Along with her degree in what could be considered a vocational learning area, Tina had embarked on further courses in management and at the time of the interview was beginning her Master's Degree. Tina commenced her teaching with a two-year employment at a small rural college of 700 students before travelling overseas for a period of approximately two years. While overseas, Tina continued to teach and on returning to New Zealand she applied for and gained the position of Head of Department at Brennan Heights College. She admitted that she had a limited understanding of what an ILE was, and that her application for this position was not based on her interest in twenty-first century learning but because she needed a job that was closer to her family. In her interview, she recalled the job interview emphasising questions around relationships and restorative practice rather than questions about her learning area, which at the time struck her as being quite different. Tina had been teaching for 7-8 years in total, but had considerable skills in utilising a project–based learning approach and felt this experience was valuable to bring to the position.

Shifting the paradigm: Changing and challenging perspectives

- PRHS

Neil's comment, "you have to have an open mind, and you have to be willing to take risks and do things differently" provides insight for understanding the findings related to the notion of shifting the paradigm. As the foundation principal of PRHS, he spent a term 'de-schooling' his leadership team, a process repeated over four weeks with the eight new 'leaders of learning' (middle management curriculum leaders) when they were appointed. This process was compressed into three days when the first foundation teachers joined the staff. Since then, all new teachers receive one day of 'de-schooling', a kind of neo-slang terminology that Neil and his leadership constructed to form alternative discourses that subvert and react to existing mechanisms and technologies of control. Such empowering terms represent strength and bravery, engaging in a disruptive discourse.

Neil described de-schooling as,

> throwing out what you know [about education, and to] empty out of your head the paradigm of...one class...one teacher, one subject, one set of activities, one piece of assessment...[and so] create a new view of what teaching and learning is like.

This process required undertaking readings, having inspired discussions, and viewing YouTube and Ted Talks clips about creative pedagogy and innovation in education. Neil's idea was that this process of 'de-schooling' (or re-education) would encourage his leaders and staff to see beyond the existing educational paradigm and question its relevance for preparing learners for their future.

According to Neil, it was important that new staff induction processes helped new teachers relinquish their enculturated beliefs and practices, a process teachers found to be confronting and very challenging. The leadership team had developed an induction web site. Once appointed to a position at the school, new teachers are able to review a number of resources that help prepare them for the differences in the way the school is organised and operates.

Neil commented that a smaller number now apply for positions than initially was the case when the school first advertised for new teachers. This, Neil believed, indicated the school's approach to education now deters some teachers from applying for vacancies at the school. Conversely, those now applying are more likely to be in tune with the school's theories and vision.

A further development to encourage reflective thinking and to foster deeper intellectual dialogue, was a weekly forum for staff to freely contribute new ideas, new knowledge or new resources for progressing transformative thinking. Neil introduced this forum from the beginning and it has provided a unique opportunity to confront existing views and beliefs about the spatiality of learning. The weekly forum has developed into a critical discourse about spatiality, and shared understandings of a space of learning that is not necessarily collapsible into the space of buildings. All members of the team contribute with a different focus, including the pastoral structure, aspects of curriculum design, and the content of the integrated curriculum.

Processes such as a strong induction programme, and the open weekly forum, will no doubt be increasingly important to the school, as inevitable staff changes can have a significant impact on the smooth operation of the school in regard to the preparedness of the staff for teaching in flexible spaces. The senior leadership are constantly reviewing and reinforcing teaching practices more suited to the open flexible space configurations, to avoid the possibility of staff reverting to default didactic teaching models, and being challenged by experiencing difficulties with collaborative teaching approaches and integration of learning areas.

- BHC

As BHC, though a relatively new school, was already in its sixth year of operation at the time of the research, findings pertaining to the perspectives of its school leaders on shifting teachers' paradigms and challenging their perspectives varied somewhat from PRHS. Thus, the theme presently under consideration was revealed differently at BHC. John, the Deputy Principal, suggested that new teachers to BHC have to learn to amend their practices, just as he did as a foundation staff member. His first reaction, as a new staff member, to the open, flexible spaces, was to feel concerned about potentially high noise levels. He came to learn, however, that noise is not a major factor, so long as there are no shouting teachers. These are the teachers who are the problem, he suggested, and whose practice must change. This requires surprisingly significant practice shifts, he has found, and such changes are an on-going factor for the senior leaders to focus on, through the school's professional learning programme, and staff feedback systems.

John suggested, that schooling in open spaces means there are new rules to be generated around the way teachers operate. Reflecting on this, he mentioned an issue with 'deprivatisation of practice', a term that I had not encountered before. John notes that teachers moving from traditional school designs are remarkably challenged by the flexible spaces. Deprivatisation of practice describes the experience of teachers working in transparent, open areas, in full view not only of their colleagues, but all who pass by and through the transparent spaces. Benade (2017a) suggests deprivatisation of practice as a means of teachers feeling more comfortable about sharing a workspace as teachers in and ILE work more closely in teams than is usually the case in traditional schools. Benade (2017a) argues that deprivatisation of practice "grows out of strong collaboration and collegiality" and requires a "community commitment to ongoing critical professional

enquiry, critical teacher action, and critical discussion and dialogue (critical search for answers, not mutual approbation)" (pg. 231). This experience of deprivatisation is deeply unsettling for some, possibly requiring the most change to their thinking. John emphasises, being self-aware of others in the open environment is equally important, this so particularly for teachers who have to learn to lower their voice volume.

At BHC, collaboration is thus a notable feature, including sharing spaces. Ideally, the senior leaders would like to see closer working relationships among the staff, though John reported team teaching had not been a great success, in part, be believes, because of such attempts being made with inadequate preparation of, and buy-in from, staff involved in such efforts. While supportive of teachers' efforts to be creative, John did not believe the pace of changing teachers' approaches could be forced. As "there is not a lot of existing [alternative] practice out there to look at", it is also difficult to shift teachers from their traditional practice of adhering rigidly to structures that are now redundant and no longer meet the needs of students growing up in a digital world.

Clearly, however, the pre-existing structure of high-stakes national assessment has hindered the process of challenging the BHC teachers' paradigms and changing their perspectives. As John noted, the "high stakes pressures...in...senior secondary...makes [it]...instantly important that you get it mostly right". While he maintained the importance of challenging teachers' ideas and practices, nevertheless, he found teachers easily defaulting to traditional practices under these assessment demands. Dealing with such challenges by school leaders is a question of managing change, the theme to be considered next.

Qualities required of teachers in an [ILE]

As asserted in chapter two, innovative learning environments are designed to support students in the development of twenty-first century knowledge and skills that will prepare them for a fast changing globalising world. This approach to learning does not only build on core content knowledge, but also includes critical thinking, creativity, problem solving, the use of information and communication skills, interpersonal and intrapersonal skills, and the ability to use 21st century tools such as information and communication technologies. The open flexible spaces and physical connectivity of the ILE provides opportunities for teachers to be innovative in their practice. As many participant teachers gained their experience in traditional schools, they found the transition to a ILE exciting and challenging, and at times confronting, demanding, noisy and intimidating. Leadership teams

engaged in the study who wanted to employ the right people to their schools often struggled to identify teachers with the skills and qualities they regarded as being important not only for making a successful contribution to the innovative learning environment but also to the debate about how young people learn best in the 21st century (and how that can be a catalyst for vibrant engagement).

From the leader's perspective, by looking at how teachers engage in practices that inspire students to become motivated and gain a love of learning, as well as understanding how students prefer to learn, helps to refocus what happens in the learning environment. They believe that approaching learning from this perspective will provide a focus of a new pedagogy, and one that will form a locus for new programmes of work. Flexible, innovative environments, intentionally designed to support twenty-first century learning demand a different approach to teaching, requiring teachers who possess a very different set of skills, qualities, dispositions and mindsets. This section focuses on interpreting the discourse of the participants who contributed to the discussion on this theme.

- PRHS

Working with the Establishment Board of Trustees, Neil's first challenge was to appoint his senior leadership team. He made it clear from the outset that "what we [have to] look for, is people's mind-sets". Thus, while he realised the shortlisting process would identify the experience and leadership expertise of applicants, he was specifically looking for dispositions and mindsets, such as, the ability to help lead change and innovation, personal resilience and the ability to deal with conflict. Neil knew they would be challenged entering the innovative learning environment. The first appointed staff member, as Deputy Principal, was Mandy, whom Neil was familiar with as he had worked with her at a previous school.

Neil, Mandy and some of the Establishment Board of Trustees members generated a set of questions to explore applicant's dispositions and skills. Mandy noted, "we are looking at this real collaborative environment, and most people haven't actually truly worked collaboratively". Hence, a teacher's disposition to work in teams was an essential quality, both Neil and Mandy describing this skill to be a priority. They thus placed significant emphasis on identifying applicants' ability to form positive relationships, have no fear of sharing ideas and teaching techniques and to be prepared to try things that would encourage students to build links between disciplines.

Mandy disclosed a process of working with staff that did not entirely fit with the philosophy of the school. She suggested that rather than give up on those who were struggling or defaulting, she would rethink the way she was approaching the situation. She found herself using specialist relationship skills she had developed in a role she had occupied in her last school that was based on a process of 'restorative practice'. Known in the education community as restorative justice practice, empowers students to resolve conflicts on their own and in small groups, and it's a growing practice around the country to respond to the behaviour problems and under-achievement of students in schools (Benade, 2017a; Drewery, 2007; Buckley & Maxwell, 2007). Mandy described her ability to use such a process as a powerful tool for working through difficult situations and having open conversations with staff. As she said, sometimes it is assumed that adult people will just get on, however the staff in her school are so passionate about what they are doing, and they work in such close proximity [in the ILE], emotions can result in someone being offended. She suggests that it would be of benefit for all staff to have these kinds of relationship skills. As Mandy noted, however, while "having good relationships with [students] shouldn't be difficult, just because...[teachers]...really believe in our vision and values, it doesn't mean they have the skills to be in that restorative state". Mandy realised from previous experience that it took up to ten years' experience working with restorative practice to build those skills. Neil and Mandy clearly pointed out, that employing the right people for this learning environment represented a significant learning curve for them.

Neil reinforced the need to provide opportunities for the students to be self-regulating, or to be empowered to make choices about their learning rather than being passive recipients. He and Mandy wanted teaching approaches that created learning programmes where students were able to follow their passions and interests, and where collaborative teaching and linked learning area programmes would enable students to make realistic connections while they learned. They fully understood, however, that implementing these kinds of programmes required very different teaching approaches that would be very challenging to maintain during the later qualification years.

There was a general recognition by the PRHS teachers interviewed that new applicants would need to be open to changing their way of teaching. Fraser pointed out that teachers cannot be transplanted into an open space environment and be expected to be able to manage teaching and learning in a way that reflects the nature of that design. Adhering to

traditional methods, he argued, would mean, however, that nothing would change. Furthermore, these teachers suggested that new graduates are unprepared for working in flexible spaces, suggesting teacher education providers also required re-alignment. On the other hand, the participants (including the leaders) regarded new teachers to be amenable to, and interested in, modifying their practice to suit the style of teaching happening in the new environments. These applicants were preferred over experienced teachers who might have thought they could change their practice but would find it difficult to work collaboratively.

Neil (PRHS Principal) also had a view on teacher education, suggesting courses be altered to ensure graduates emerge from university with skills that prepare them for change. New teachers should be able to work in teams, and manage themselves in open plan learning spaces where there could be up to three different classes. Mandy claimed that this included managing the volume of their voice, being aware of other classes in the space, knowing how to use technology, being able to improve individualised learning, and to be able to manage conflict situations.

One of the biggest challenges for the leadership team at PRHS has been to give pragmatic answers to some of the questions and issues surfacing in teaching practice. Often the leadership team members have questioned their own ability to balance flexibility, and certainty. The PRHS leadership team commented on the difficulty too of balancing a lack of pragmatic structure or clear direction (when they were trying to pioneer new territory with innovative new programmes and ways of teaching), with fully articulated expectations. So, it is thus important to have teachers able to perform under pressure in flexible and dynamic environments.

- BHC

John explained that the BHC open-plan learning environment requires collaborative teaching approaches, which new teachers can find challenging. As noted earlier, from his perspective, teachers employed at BHC struggled most with 'deprivitisation of practice', and working in an open-plan learning environment. Tina talked of a gap between pedagogy for the way schools used to be designed and how they are designed now. She referred to a lack of change management that has occurred to adequately prepare teachers for such radical differences in teaching theories and practices necessary for working in an MLE:

"people probably haven't quite anticipated the degree of learning that there needs to be for teachers."

John claimed it takes a shift in attitude as a teacher to adapt to the innovative learning environment, recognising that he personally was not well prepared for the challenge. He quoted 'team teaching' as an example. He realised that team teaching in traditional schools is significantly more difficult to achieve, and less likely to happen, as the physical layout does not necessarily provide the catalyst for successfully implementing team teaching opportunities. He believed that teachers are therefore not psychologically prepared for making the shift to open plan flexible spaces where working cohesively as a team is required. As an example, he mentioned that some new teachers to BHC had positioned portable whiteboards to form a wall or barrier around their students to represent classroom walls.

Dianna's (BHC teacher) experience as a teacher in conventional learning environment was to take ownership of her own class in her own space. Working alongside another teacher in an open plan space, in contrast, was confronting and 'intimidating.' Working together in a team environment has to be taught, as teachers have traditionally worked alone, in a cellular classroom, to deliver a single curriculum. In an ILE, teachers are expected to be facilitators of learning, that is, to be able to work across classes, sharing spaces, supporting students in other learning areas in the company of two or three other teachers.

Interestingly, even as a highly experienced and confident teacher, Dianna (BHC) still finds the skill of 'facilitation' a challenge. The emphasis on teachers delivering curriculum content leads them to focus on ensuring students engage in activities that enable them to learn the components of the curriculum which make up their important assessment. She tried bringing teaching approaches that she had used before and described how they had worked well in a different environment, however, because they did not work as well in the new environment, she had to completely rethink the way that she taught. Constant reflection about how she was teaching (less didactic and more co-constructive approaches), using trial and error (as a way of testing new ideas) and technology (to develop flexible student-centred learning programmes) was a way of making progress. She explained that open spaces go hand-in-hand with having an open mind, and being flexible. She found being flexible about using open spaces one of the hardest adaptations to make, however, as teachers inherently are very territorial (due to the nature of siloed subject areas).

Murray (BHC teacher) found that trying to implement a different pedagogic approach in some subjects presents challenges especially if the teacher was trying to think of meaningful questions that would enable students to come up with answers to complex technical problems by themselves. He also admitted that teachers at BHC cannot switch off, because students are always present, either working on their projects or socialising in peer groups. Due to limited office space at BHC, teachers are constantly part of this milieu and often remain in student-company for most of the day. This encouraged very different forms of relationships between students and teachers. Murray claimed that this was one of the major differences he had experienced as a teacher, requiring a significant mindshift from other teaching environments.

The close proximity with which teachers must work in open-plan learning environments leaves them vulnerable. Often relationships become strained if there are differences in how practices and management strategies are interpreted, leading to anxiety or anger. The ability to cope with peer criticism is therefore a critical quality for teachers to have. Teachers who have been appointed to BHC have had to be open to feedback, and be able to communicate feedback to their colleagues about their teaching. This feedback may come as a result of incidental 'walk-pasts', when colleagues (and senior leaders) have their attention drawn to specific practice by teachers they observe while passing through. Likewise, the ability of teachers new to BHC to cope with noise or visual distraction was considered important. John believed such dispositions and skills were not at all encouraged in the siloed classroom in which the teachers have previously originated.

Ryan (BHC teacher) gained more confidence as his teaching progressed. He realised that being able to share ideas and teaching approaches without feeling self-conscious about his views or confidence in his teaching practice was a major step forward. In the past, he had not experienced this as successfully as it was applied in this environment. He discovered strength from being part of a learning environment rather than an environment where there was a negative attitude to bringing new ideas and thinking. He found sharing to be empowering. Like the others interviewed, he found that he was able to form very different and less formal relationships with students, which meant he could add value in a student-centred learning approach.

The senior leadership team believed that getting feedback from the students would help to build positive learning partnerships between teachers and students at BHC. Feedback was seen as significant to the learning relationship model, providing voice to the students. Feedback was also regarded by the participants to support the development of effective learning partnerships built on trust, growing from transparency both in the physical environment and curriculum expectations. Students' feedback can also reflect on the teaching performance of their teachers, and as John, the Deputy Principal reported, the transparent open nature of the environment encourages students to make reference to teachers they would prefer, given what the students have observed, even indirectly. The importance of being able to accept feedback was identified by several participants, some, like Denise quoting examples of teachers who have left the school because the feedback received was undermining of their professional self-concept.

LEADING AND TEACHING IN FLEXIBLE LEARNING SPACES

Teaching in flexible spaces

Teaching in flexible spaces was something that was either enjoyed for reasons of collegiality, flexibility, collaboration and companionship or dreaded for the sake of noise, chaos and de-privatisation. Murray's (BHC) experience of working in flexible learning spaces meant that he could observe other teachers and learn from their different teaching practices. He reported being able to build closer professional relationships that have sometimes led to the development of collaborative projects and more student-centred learning opportunities. Susan (PRHS) would often walk around during a non-contact period and see what other people were doing. As she said, trying to do this in a cellular classroom based environment would mean the classroom dynamics would immediately be disrupted as students naturally look up when someone else walks into the room. Murray claimed that in these environments the students are adept at blocking out noise (self-regulating and self-managing) and not taking notice of either other people walking through their space or another teacher sitting watching someone else's lesson. He felt this was the most effective way of sharing 'best practice' and breaking down barriers for collaboration.

Staff views of teaching in PRHS were varied. Although excited and ambitious about being employed at an MLE all participants agreed that they were not prepared for such a radical change in pedagogy as demanded by the open plan spatial differences of the learning environment. This was because everyone who was appointed to a position at PRHS felt

they were an accomplished teacher, and believed they had the confidence, existing experience and knowledge to make the pedagogic shift from a traditional teaching environment to the MLE with minimum of discomfort. Adapting to working life at PRHS turned out, however, to be the beginning of a very steep learning curve for teachers such as Susan. Her pedagogy was influenced by her previous experiences but she had to rethink her way of teaching, "I always did adapt what I was doing to the students in front of me of course because that is good teaching but I haven't rethought things as much ever as I have this year".

Simon (teacher at PRHS) noted that the students love the environment, but added that "if the learning and teaching or the focus of teaching is very powerful then [the environment] doesn't matter." He saw the benefit for students being the ease with which they can move between specialist facilities to achieve an outcome: they "can go into the recording studio, write a song, record it, make a video for it, report on something out of English and be assessed across a whole curriculum."

Ryan (BHC) was disappointed that the environment had not made a bigger impact on the implementation of collaborative and integrated learning programmes citing that many teachers still want to hold classes that silo subject areas and stick to a chalk and talk mentality. These teachers often use the bookable spaces, which were smaller glass walled breakout rooms attached to the learning communities. Over half of the teacher participants interviewed believed that keeping spaces tidy and well organised was a challenge with most citing the fact that no single teacher is responsible for any of the spaces (as they would be in a cellular classroom model).

For Simon (PRHS) lowering his voice and moderating the amount of talking he did during a lesson was a way of maintaining social order when there are at least three other teachers teaching in the same space. By leveraging the power of the physical connectedness, teachers (from PRHS and BHC) found the environment to be a good catalyst for building a collaborative learning environment with students. Because there are no office spaces for teachers, they would end up spending more time sitting, socialising, talking and sharing experiences and expertise with students during the day. The incidences of unplanned, uncontrolled, accidental and or serendipitous social connections enabled the cultivation of very different teacher student relationships and one that clearly resonated with students.

The leadership teams in both schools reported their engagement in critical discourse about the nature of how staff struggle with the physical and visual connectedness of the open spaces, and how the close working proximity and professional relationships are either aggravated or enhanced by this opportunity. Mandy (PRHS) at times doubted her ability to manage these kinds of situations, and withheld the temptation to think that there are teachers who just do not fit. Using skills she inherited in previous management experience (and she said this took her 6 years to learn), giving up on anyone was not an option, instead she favoured the process of open learning conversations to reach compatible solutions. As much as the literature and philosophical discussions that surround innovative learning environments advocate 'collaboration' as a key pedagogic approach for open flexible spaces, working collaboratively is a struggle for many people. Tina's (BHC) response is clear on this situation, stating, "being collaborative does not mean you come to the table thinking that you have got all the answers".

Dianna (BHC) challenged the assumption that teachers who teach in an innovative learning environment are 21st century educators. She agreed that there are some committed to the ideology of 21st century learning, but admitted there has been a considerable struggle with "the open plan thing". She recognised that the open plan arrangement has inspired some integrated curriculum approaches.

Ryan and Dianna commented on how teachers had adopted a pedagogic approach to encourage students to become self-managing learners. As Dianna noted, we "do a lot of student led learning for content knowledge...a variety of activities and a lot less chalk and talk". She described how this has led to the students actually going and finding the information out themselves rather than relying on her. Ryan was always good at teaching off the cuff in a traditional learning environment, but surprisingly, now he had to plan and to not just rely on serendipitous results. He discovered, however, he could be relatively structured, but also offer individual, really personalised learning.

In the main, however, John seemed somewhat despondent, reporting that, after six years, the teachers at BHC were yet to fully realise the potential offered by shared, collaborative space. In particular, as noted earlier, team teaching, while operational at PRHS, had not yielded much success at BHC. This could be attributed not only to the enthusiasm of new staff at PRHS, but also to its foundation years catering only to Year 9 and 10, whereas BHC teachers were working at the senior, assessment-oriented, Years 11 – 13. John defended his

colleagues, however, by denying that flexible space meant innovative practices would follow. He suggested furthermore, that privatised teaching habits are deeply entrenched, although agreed teachers are challenged by teaching in transparent spaces where others could witness their teaching. This may explain why he noticed teachers reverting to default practices in the early days of the school, using whiteboards to manufacture closed spaces. This apparent resistance by teachers has now been overcome, though the high-stakes national assessment regime is a temptation to revert to default practice settings.

Relationship of space and pedagogy

Space and pedagogy are intimately linked, as this research has found. They do not exist in a linear, simplistic relation, but in a rather complex and tense one. At times, space gives way to creative pedagogies, while at other times, it is a site of conflict and resistance. Space is a metaphorical expression of practice at PRHS. The "open, visible, flexible connected building" relates to an "open, visible, flexible, connective way of teaching", according to Neil, the principal. Collaboration falls naturally out of the linkages created in the curriculum, made possible by the possibilities of linking practice in the flexible environment, and by teachers willing to seize that opportunity to collaborate. Fraser (teacher, PRHS) had noted, however, that some preparation is required to be ready to work in flexible space, as simply being present in flexible space does not necessarily bring about change in pedagogy, as John and Tina, Deputy Principals at BHC could attest. John had noted some teachers persisting with traditional, single-cell practice, though others, he and Tina observed, did utilise the opportunity to work differently. Teachers could find themselves rubbing up against each other in open spaces, creating tension. John did suggest, however, that this could be productive tension, as "the open learning environment creates more opportunities for growth – for open to learning conversations".

Tina (DP at BHC) admitted that being flexible is an important part of pedagogy in open learning spaces. She had come to realise this flexibility extends to giving up her space to someone who has a greater need, such as for quiet. This attitude is a far cry from her past, when she was "really, really territorial". This level of re-thinking has been managed through staff development approaches, and creating blogs where everyone could share their thoughts and personal points of view, which is a high priority for staff at this school. She remarked on those employed at the school who would suddenly realise that teaching in an open environment requires a change in pedagogic practice:

> You have got people who look at this space and go, "oh yeah", [but continue to] do what they have always done. Then you got people look at this space and go, "oh wow", and do a whole lot of really cool things.

All teachers interviewed at BHC nevertheless were united on the issue of noise associated with a number of classes being together in an open learning space, and how this had a significant impact on their pedagogy. John claimed instances of this happening decreased as teachers became more familiar with working in the open space learning commons.

Collaboration

- PRHS

Collaboration and team teaching are pedagogic practices requiring significant time resources to coordinate and structure. Kirsty (teacher) claimed:

> ... it is not that we don't have the expertise in but we just don't have the time to. There never is enough hours to get into those conversations about sharing bits of practice. I think we have one meeting out of the whole term of best practice designs. It is not really enough. So, I just catch teachers on the fly and ask any suggestions for doing this, this, and this?

At PRHS, there was a decision to buddy teachers from different learning areas together to teach in collaborative teams, delivering integrated learning programmes to combined classes. These encounters were facilitated in the large learning common areas. This innovation clearly challenged teacher's engrained traditional practices that for years had been focused on delivering single subject content driven programmes. They were confronted with having to redefine how the curriculum could be integrated into co-teaching modules where students from different classes are congregating in the same space. As Susan noted, "so I have...because we have stripped things down as well...so I have rethought completely how I am teaching and what I am teaching."

Due to this transformation in the way teachers approached co-teaching modules, staff reported instances of tensions that had arisen because of different pedagogic practice operating in the one area, the learning commons. As Simon (teacher) noted, "when some

teachers are doing a lot more group work...that...[creates]...a more noisy environment...[and] a little bit of conflict in terms of how that noise turns to possible distractions as well". Therefore, being respectful of others close by is an important for effective collaboration in flexible environments. Nevertheless, Kirsty initially found collaborative teaching quite difficult to manage, as she did not relate well to the person she teamed with, leading to tensions between them.

On the other hand, other teachers reflected positively to the change experience, such as Fraser, who summed up the process the staff at PRHS were going through trying to make sense of the collaborative co-teaching learning modules: "I have had to rethink completely how I am teaching and what I am teaching". Susan described the teaching practice: "...you might have one teacher working with a majority of the class or an activity and one teacher taking small groups away." Though she found this difficult to begin with, she 'loved' co-teaching.

- BHC

Collaboration between and across curriculum learning areas was yet to become a reality at BHC at the time of the research, despite the school having been established six years prior to the research commencing. John (Deputy Principal) regarded this process still to be in its infancy and the solution was yet to be found. Despite significant professional development teachers seemed confused about how to collaborate, for example, by creating learning systems to integrate the curriculum Denise (teacher) intimated that the source of the difficulty may lie in the model of "traditional secondary school curriculum delivery...where everyone is responsible for their part in delivering content knowledge for each learning area". She notes that, "with collaborative teaching – one teacher may be doing a bit of a workshop up the front while the others actually support groups, so it requires different types of teaching approaches."

Students central to learning

Common to both schools, is to place students at the centre of their learning. The welcoming and open environments of the schools encourage students to engage at a more social (as well as educational) level, with inviting spaces and modern furniture providing a warm and secure place to gather. Denise (BHC) reported students being present well before classes starting at 8.50 am, at remaining at school well after 5.30pm. An important

function of innovative learning environments from a designer's perspective (evident in the literature on the ontology of space) is to encourage seamlessness between living and learning in that the student's everyday lives are orientated around learning in their home life, community life and working or school life. The students Denise referred to treat their school like a local mall, a place where they socialise, learn, explore and experiment, share ideas, eat and drink together and most of all they are able to do all of this in a comfortable and safe environment. The management of students being present throughout the day at all times can, however, be exhausting for staff. As Ryan (teacher, BHC) stated, teachers are always ready to engage, and even opportunities to socialise often led to further enquiry or an extension of what they might be doing in class.

Having access to technological tools was keenly defended as additional learning resources at both PRHS and BHC. Although controversial amongst some parents, teachers encouraged their students to have digital devices with them at all times, and in some cases, these were stipulated to enable access to a variety learning resources. Social media were utilised to support students in a more flexible and on-going way. Students used Facebook to text and send emails, while other applications were used to communicate about their projects, ideas, raise questions, and keep contact with their teachers if they were not in the learning commons with their class, but, for example, exploring their own learning in other areas of the school/community.

The students' interest in being at school for longer periods of time, being adept at multi-tasking, remaining digitally connected and being able to scan for opportunities to pursue their interests, reinforces those theories that paint students as digital natives or who operate in continuous partial attention mode (Stone, 2007). Participants reported that it is natural for these students to use digital devices as their main form of communication, while teachers noted that keeping track of students' attendance is increasingly challenging, especially when students are away in different places gathering the most appropriate materials and resources for their learning needs.

LEARNING IN A FLEXIBLE LEARNING ENVIRONMENT

Schools interpretations of twenty-first century learning

- PRHS

An important driver of futures-oriented schools is a vision of 'twenty-first century learning', accordingly, this research study endeavoured to gain a sense of what this might mean for the two schools. The leadership team at PRHS were motivated from the outset to establish what this might mean, and thus sought to identify the elements of twenty-first century learning. What Neil (Principal, PRHS) identified was a commitment to particular pedagogical approaches, specifically, "personalising learning...inspiring [students] through deep challenge and enquiries ... [and moving toward] authenticity and student choice – developing self-regulation [in students]". To better anchor their understanding of what this all might look like in practice, the leaders visited other schools to learn, which focussed their thinking about how to design the curriculum. The element of self-regulated learning and student choice was a significant consideration, and is evident in the curriculum that has been designed at the school.

The senior leadership team focused on 21st century pedagogy as being an essential component for implementing 21st century learning programmes. Teachers quoted researchers they had followed, researchers who made a difference to their thinking about how they wanted to build their own practice. The school, recognising the benefit this literature had on personal development, had assembled a list of required reading for new teachers. This preparation empowered the staff in a way that they felt comfort in contributing to in-depth discussions about learning democracy, pedagogy, curriculum implementation and assessment conditions. Tina noted research had indicated, "if you frame knowledge too tightly...the power is with the teacher but if you can take away some of that framing that power shifts...". Specific decisions were taken to implement 100-minute learning sessions, develop a system of learning mentors to support student progress and focus their learning pathways, group teachers together to implement an integrated learning programme, develop a means of tracking dispositions and aptitudes as well as curriculum understanding in student learning, and create close relationships with student families.

- BHC

Among these principles of twenty-first century learning, student choice and self-regulated learning are among the most significant characteristics of the type of learning made possible by flexible learning spaces. These spaces, that provide greater opportunities for team teaching and collaboration, should also make possible creative approaches to the curriculum, thus it is important to establish what this research study found in respect of these two items of interest. The senior leadership team focused on integrating technologies, building strong student/teacher relationships [through tutorials] and effective networking systems to ensure students are able to connect, share and collaborate not only amongst each other, but with the teachers and wider community as well.

For one day a week, students engage in deeper learning experiences—learning that results in meaningful understanding of material and content. By hacking the timetable with a programmatic innovation in the form of 'colab workshops', student learning becomes social, active, contextual, engaging, and student owned. My interpretation of 'hacking' in this instance, is that it is a kind of neo-slang terminology that has been constructed out of the social production of space/s where people are subverting/reacting to existing mechanisms/technologies [of control] to form alternative discourses as a means of expressing a semiotic of meaning. They are empowering terms that are representative of a strength ... a show of bravery ... to engage in something that is anti-normalisation? Colab workshops are a response to materialising key elements of the New Zealand Curriculum designed to expose students to develop important transferable skills and knowledge. Students are required to develop a project based on their own strengths and passions. There are four specific requirements that guide the development of worthwhile projects: student ownership and agency; extension of learning beyond the classroom; creating a quality product; student participation with, and contribution to, the community.

The leadership team designed this innovative approach to the curriculum with 21st century skills in mind as learning in this way encapsulates deeper learning theories, such as real-life experiences, problem solving, communicating effectively, building collegial and professional relationships and communities, testing and trialling, branding and selling/promoting and entrepreneurialism.

Independent learning

- PRHS

According to Simon, the environment at PRHS provides an opportunity for students to be more involved in their learning (because of the integrative nature of classes) and therefore more inclined to question why they are doing things. He attributed this to the change in pedagogy that places students at the centre of the curricular decision-making process (co-constructive learning model), compared to traditional schools where they are told what to do by the teacher (structuralist learning model). Independent, student-led learning empowers the students and they develop a questioning mentality. Even though this change leads to active student engagement, sometimes it can be considered by some teachers to be an affront to their authority, especially when students question the purpose of learning objectives, as indicated by Susan;

> ...[if they] can't see the logic in doing they will actually say, "why are we doing this? We have already done this" So, it is probably a fine line between the students being assertive and...teachers saying...[it] is being cheeky...

Denise described a benefit that originated out of the collaborative co-teaching modules (that inspired natural connections between learning areas) as being an opportunity for students to experience independent learning. As a subject teacher, she utilised course content knowledge to focus the students by teaching the structures and techniques traditionally recognised as methods for achieving an accepted outcome. Within this process Denise would provide examples for the students to analyse and these tended to guide and constrain the students rather than allow them to establish their own interests to motivate them to find out how best to present the information they had obtained. Working collaboratively with another teacher to integrate two subjects opened the opportunity for students to independently explore larger more authentic issues.

Simon talked about how providing opportunities for students to engage in projects where students initiated the concept and managed themselves [independent learning], enabled deeper learning,

> ...[when] students are able to work on their own project and they link all their learning [they] develop skills from across the curriculum. Students don't need motivating when they have

> identified something they want to work on, something that is real...

During this independent project work, Denise reported enjoying the honest feedback and discourse she has with the students. In her opinion, the way students can work in the environment breaks down teacher's personal space and blends personal, teaching and learning space, where there are no real secrets or hidden agendas. It helps to encourage confidence and trust during times of independent learning where teachers do not necessarily need to be in constant contact with the students who might be in or out of the school engaging with other people. The students respond by being more like critical colleagues as well as learners. Students are more likely to debate issues or concepts they may not understand or need more information about and have little difficulty in confronting the teachers about their needs. During these times Dianna believed the students also add significant value by collaborating with, and supporting others.

- BHC

The participants from BHC all expressed an interest and willingness to encourage and promote the concept of independent learning. For some it came naturally in their practice but for others, the circumstances of teaching in open spaces stimulated and advanced the approach. One example was Susan (teacher) who had traditionally been located in quiet spaces for her students to engage with the content of her learning area, as it was important that students listened carefully to transcripts. Trying to facilitate this kind of learning in an open plan space became an almost impossible task. Not wanting to be defeated she reflected on how she could alter the way students could access the material. In doing so she developed a system of independent learning. By using technology, she realised that students could have better access to each of the resources without needing to be in a quiet allocated space to learn the required content. Students could access the resources on their digital devices and listen on personal headphones. Students are thus enabled to learn where they are, at their own pace, and at different times and not be constrained to learning at school.

At a learning programme level, Colab time at BHC provides an opportunity for students to engage in a topic of their choice for one day a week where working independently is a mandatory expectation. Even within group situations students are required to have a designated responsibility ensuring they are accountable for managing part of any project. As Tina explained, the use of technologies such as mobile phones, are an important

communication and learning aid, especially when students are working on their Colab projects. When students are given the freedom to work independently, it often means they will be working in either different parts of the school or in the community meeting mentors, seeing experts, or talking with clients. The use of technologies helps teachers and students to easily interact, connect with outside agencies, and locate themselves for accountability purposes. Susan claimed that permitting students to develop independence and self-control empowers them and supports the development of independent decision-making and leadership qualities. The use of technologies as a learning aid, however, was not necessarily embraced by all staff at BHC, with some believing students struggle to moderate their technology use responsibly.

Curriculum and curriculum integration

- PRHS

All the teacher participants at PRHS agreed that the flexible learning environments appear to be designed for facilitating integrated learning. There was, however, general agreement that integration is not developing as well as the staff would have liked. For several teachers, integrated learning was an ideal they were still striving to reach. Neil (Principal) concurred, suggesting the process of collaboration between curriculum areas was still in its infancy and a work-in-progress. Despite significant professional development, teachers were still, at the time of the research, working on how to create learning systems to integrate the curriculum while both respecting individual learning areas and providing scope for developing personalised programmes. There was an initiative to develop different approaches to the timetable programme. This was termed Wheelies[13] (integrated curriculum modules of two subjects), Spokes (personalised time for building dispositions and aptitudes), Slots (greater focus on single subject content) and Big Projects (a time for students to engage in something of interest/passion to them). These may have changed since the research interviews.

'Wheelies' started with a three subject-based integration approach, through a period of trial, this evolved into the adoption of a two subject-based module model. Kirsty explained that "the feedback from the students and the staff was that it was a bit messy and they weren't seeing the true connections." Managing learning in a large space with three teachers and three classes was an ambitious target, whereas coordinating two subjects was easier for teachers and students to manage. Kirsty continued, "we have reverted to having either two

[13] *These names are fictitious.*

together...or one subject might be on its own." One day a week at PRHS 'Big Projects' was an option. These provided opportunities for students to engage in something that they were passionate about or had a deeper interest in pursuing. The time allowance for this kind of encounter was extended in the timetable and the students got to experience deeper learning.

A possible downside to this approach to curriculum was explained by one of the teacher participants, Fraser, who commented on the extremely challenging nature of accommodating this kind of programme:

> [The programme is] full on. We have the collaborative planning so you have meetings for that, then any of the planning for the actual activities that you are doing and things beyond that. So, [the] workload has been really full on [even] with just a small number of students...If you talk to anyone on the ground they would agree that we've all got different focuses, making planning a full-time process.

An added complication was that these programme innovations had never been trialled, so systems were constantly being reviewed and modified "so it is the ongoing change that you just got to roll with and hope that things get sorted" (Fraser).

The cross curricula team came up with eight key concepts that they felt were integral in all learning areas (subjects). These concepts consisted of a generic focus such as citizenship or identity and these formed the focus of planning in each module for each term. This opened the possibility of creating a connection with everyone in the school focusing on identity or citizenship, [creating a] big picture... across the whole term rather than it just being in say PE or Maths" (Simon, teacher) Mandy reinforced the benefit of key concepts in creating cross curricular connections:

> [Because] it was citizenship...[all]...students get [a] really deep understanding of what that means and then also see it within how the learning areas are linked and then hopefully they start thinking like that so when they are doing their NCEA and I want them to get their 3 credits for that speech they aren't just limited to the ideas that I helped them generate in my English class, they can take – oh well at the moment I am doing this in Technology or I am doing this in Science or I am doing this in Social Studies and they can bring that in.

- BHC

The open plan spaces at BHC support large groups of students working on special projects. The area accommodates 70 or 80 students, providing more flexibility than a traditional classroom environment. Greater emphasis on curriculum integration was an intention of the early leadership team at BHC and even though it has been trialled by a variety of teachers over the six years of operation, success has been mixed. As John (Deputy Principal) explained, with similar sentiments as described at PRHS, even though the open flexible spaces allow for much closer teacher/learning area engagement, trying to implement a cross curricula model requires a significant cultural shift in teacher's mind-set and pedagogic approach.

Interestingly, Tina (Deputy Principal) blamed a high turnover of teachers as contributing to their lack of traction with curriculum integration. This is so as teachers require substantial professional development before they are comfortable implementing a cross curricula model. She cited subject isolation [silos] as a firmly entrenched value in the pedagogy of secondary teachers. There is a level of discomfort teachers experience when they move out of their specialist content area into another's area, knowing that NCEA assessments require specialist subject knowledge. The closest BHC has to curriculum integration is during their Colab workshop days when students are given the opportunity to explore learning through [individualised or group] project based model. As Simon (teacher) claimed, when students drive their own learning pathways, they automatically work across the curriculum. They experience learning with greater excitement and authenticity, rarely considering that they are learning content knowledge from multiple learning areas

However, the initial ideal of project based learning programmes in the context of curriculum integration was not an easy goal to pursue, because, as Dianna (teacher) indicated when reviewing the amount of subject content she was able to engage with:

> ...I just feel there is a tension between how much subject content I have taught this year to what I would teach to a traditional year level class, and the subject content I have taught this year is concerning.

This required a review of her practice, which Dianna found 'very confronting'. She altered her approach to lesson planning and tried to be more responsive to the student's needs rather than worry about the amount of content knowledge being delivered. She suggested that integrated teaching methods are harder to implement than first thought as students can work quickly across learning areas and may need faster access to teachers for each teacher's expertise. There was another concern that related to tracking student absences, in that students can work on their own and at their own pace, meaning that they may not be at the same place each time they meet as a learning group

As John also noted that managing curriculum integration was an intention of the school but in reality, it was a difficult goal to accomplish:

> It was always sort of a dream that we would be breaking down the silos as we would like to work between the subject areas but I don't think that has happened as much as, as what we originally hoped would...and I think we have used, the space really well for co-teaching but that is a different thing...

Real world learning: Principles and benefits

- PRHS

Key principles of real world learning include relevance and meaningfulness, that is, projects that tap into students' individual and collective passions leading to outcomes that 'count' and are thus valuable in the minds of students. These principles underpin projects focussed on enabling students to make links to and with the outside ('real') world. Examples include "going down to the local Primary School and coaching [students] and then arranging a sports tournament" (Neil, Principal). The outcomes of these projects engage the students in 'authentic' tasks (such as actually selling the produce grown in a vegetable garden, or the sports coaching example) or making links to 'experts' in the community who are able to provide intellectual and developmental support to projects devised and executed by students.

Aside from the obvious benefits, these projects unify theory and practice. For Neil, "actually building a rocket and firing it...not just exploring it and researching it...has got some authenticity about it". Working with community partners leads to a noticeable improvement in the standard of student work. Actually, bringing these partners to the

school to the final displays of the completed big projects means the stakes are high for the students, a factor the teachers are able to exploit in motivating the students. An additional benefit of 'real world learning' is that students more easily make links across learning areas.

- BHC

The programmatic timetable innovation to incorporate the 'Colab project' as a weekly experience provided an opportunity for students to engage with the wider community. This initiative required that the individually chosen projects involved and engaged wider community members. Students thus have the opportunity and encouraged to make regular off-site visits as part of building their real-world experiences. They also seek expertise and support from others within the school community, so on these days, there is increased movement and fluidity across the learning commons. Tutor group teachers support these projects for groups of around fifteen students, monitoring their progress. Dianna, (teacher) explained, however, that working with students who are working on their own projects, is a difficult (yet satisfying) teaching situation to manage:

> I could be having five tasks going at the same time with five different outcomes and that is hard work as a teacher but so rewarding at the end of the day when you see all of this...and helping one another...And it is sometimes after a 100-minute session you are exhausted, but so much more gets done to be honest.

The staff participants shared Dianna's positivity about facilitating learning on Colab day, despite the challenge of managing such large groups of students, all potentially engaging in different projects. In their opinion, this innovation links the students to real world learning experiences so important for making learning authentic and meaningful. Simon (teacher) discussed a project that was being developed in conjunction with the local city council. The students had formed a team to manage the development of the project with each student being allocated responsibilities. At various times and at the different development stages, either the whole team would meet for feedback and co-ordination of future work, or part of the team would meet to discuss a particular element of the project. Simon facilitated the group when further co-ordination or guidance was required to become more self-managing. These experiences led to students eventually producing a quality outcome and preparing presentations and modelling the outcome to the council.

For Tina (DP), the benefit of these kinds of learning experiences is that students are responsible for managing their own learning, building collaborative relationships, negotiating time and resources, making financial decisions, and utilising technologies. She also commented on the benefit of the large open learning spaces with its portable furniture, that enable students to create their own meeting spaces, yet still allowing teachers to oversee large numbers of students at a glance to ensure their individual or group needs are met.

Assessment and learning

- PRHS

At the time of this research PRHS, though a year 9 – 13 college, had only year 9 and 10 students, thus was not involved in high stakes assessment. There were views beginning to evolve amongst the staff about national assessment, however, and these were considering alternative models to the standard level 1-3 NCEA Programme. The National Certificate of Educational Achievement (NCEA) is the official secondary school qualification in New Zealand. It was phased in between 2002 and 2004, replacing three older secondary school qualifications. The New Zealand Qualifications Authority administers NCEA. Discussion amongst participants queried the need for Year 11 students to have to complete a whole level one programme.

The team at PRHS were focused on finding creative ways to implement curriculum, but still ensuring students' opportunities would be maximised. This led to discussions about extending into Year 11 the Year 9 and Year 10 general curriculum, characterised by personalised learning, before focussing on the qualification years, characterised by specialisation. The teachers believed this approach would help liberate their thinking around potential programme designs that lead to personalised learning opportunities that would enable students to have their individual learning pathway requirements met. Planning and discussion among the staff on this point led them to realise that for some Year 11 students this could mean following five or six subjects delivered (in isolation) or to have their whole programme available through passion projects. The decision to be more flexible about the rigidity of a level one NCEA qualification year, was an inspiration that cleared a pathway for offering more generalised curriculum up until the end of Year 11. Neil reasoned that "as long as you make sure there is full curriculum coverage still going on in Year 11, no one is left out of Engineering School or Medical School or whatever".

- BHC

BHC was in its sixth year at the time of the research, and was undertaking NCEA. Thus, high stakes assessment practices, not evident at PRHS, were in evidence at BHC. As John (Deputy Principal) pointed out, as soon as teachers focus on their students' performance in standards-based assessments, they move into a default mode of teaching i.e. they fall back into a didactic model of delivery and pull their classes in for more directed learning activities. The general consensus among the participants at BHC was that the pressure of meeting the demands of controlled assessment tasks associated with highly technical curriculum content, measured by standards-based assessments, stifles creative approaches to learning. The timetable at BHC provided four out of five days a week where three sessions of specialist subject slots are located. These slots house the individual learning areas as in most other secondary schools and where course content is based on the requirements of NCEA.

From Simon's (teacher) perspective, to change the way the school approached the requirements of NCEA, would require changes to the current timetable structure. Any attempt to implement cross-curricula modules would mean that components of NCEA would be lost. He was wary of such a strategy furthermore, as its implementation would require significant professional development so staff could develop integrated modules. Although it was his view that NCEA is sufficiently flexible to bring together certain standards to form a module or a topic or course, such as learning about poverty or social justice with technology or bio-mechanics with Physical Education and Biology working together, he was adamant, however, that this would require a major cultural shift in teachers' pedagogy. Tina (Deputy Principal) hoped to see a more flexible system for gathering evidence of achievement to complement a cross curricula module format.

STUDENT VIEWS

Students at each school were invited to participate in a forty-five minute, semi-structured focus group session to discuss their experiences of being part of the innovative learning environment. Five students made up the focus group at each school and were purposefully chosen for their range of ages and different gender. The kinds of questions that they were asked include:

- Do you enjoy coming to this school? Why?

- Can you describe your thoughts about learning at this school? Do you think learning at this school is better than other schools? Why?
- How do you find the design of this school ... is it different to other schools you have been at ... the way the spaces are organised? What do you like/dislike about the design?
- Do you think the design of the school enables you to learn in a different way? Why?
- Do you think the teachers are different at this school? Why?

The students who participated were articulate and talkative about their lives at the school and in the main were very positive about their learning experiences and the environment. If there was one definite overall comment that can be made, the students appeared to be able to adapt to their new environment easier than the teachers. Students discussed how easy it was to feel comfortable and confident in using the facility in a way that suited their learning needs.

- PRHS

According to the students, the teachers were prepared to engage, and they made an extra effort to understand individual student needs. They were prepared to be flexible about the way students engaged with their programmes of learning, often allowing students to have their input to the planning structures and content. The student participants recognised that their teachers wanted to ensure that whatever students learned, was relevant. Matt commented, "they make sure you know how you can use it in the real life...".

They found the teachers were different from those they had known before. The focus group participants commented that student-teacher relationships are respectful, and that teachers are approachable. Mutual respect was highly valued by students. Matt claimed that it is easy to form positive relationships with teachers because the teachers care about the interests of students. The view of the students was that the environment was a significant reason their teachers were different to those in traditional schools. The open learning environment seemed to enable the relationships they described. They also referred to the collaborative teaching approaches teachers had adopted, brought about by grouping two to three classes in one open space. The consequent sharing in the large spaces had helped collapse traditional notions of territory and control mechanisms. The students acknowledged, however, there were tensions amongst parents about the learning

environment. Sophie reported that her father believed there was the potential for students to be distracted by other classes in the same area, so was reluctant for her to attend the school. Matt reported that his mother was concerned about the grouped desk spaces, where sometimes up to eight students would sit.

While student participants were positive regarding the general environment at PRHS, this constituted only part of their enjoyment of learning. They drew particular attention to the development of community mentors, which the seemed to value. Sophie described the way these mentors "are chosen to suit student's subject interests or passions. [The mentor is] there if you need help, answers or anything, [and they come to know]...where you are in your learning what your weaknesses are and your strengths".

- BHC

Like the students at PRHS, this group of participants found their teachers were different than others they had previously encountered. The relationship between teachers and students was characterised by the use of first names, leading students feel like an adult—in Jenni's words, "feeling like another valued human being". Thus, teachers were not simply exercising control over their students. Many commented on the way teachers work beside them to support and nurture their individual needs. Peter mentioned the many conversations with teachers, "and sometimes those conversations are not even about school. It is so good to know that we can talk about anything, it makes talking to them about school stuff more relaxing". This suggested a non-confrontational working environment.

The student participants referred to the tutorial system, which they particularly valued. At the time of the research, tutorials were scheduled in two 100-minute time slots each week, facilitated by staff members acting as advisors to support students' learning programmes. This system replaced what, in a traditional secondary school, would be the form teacher role. Tutorials offered the opportunity for students to evaluate their learning on a one-to-one basis with this designated teacher, who could offer personalised intervention and guidance, encouraging students to take responsibility for becoming more self-managing. This was helped by the fact that these groups were kept to around 15 students. Jenni (student) regarded the individual attention and multi-level [yr 11-13] nature of these groups extremely rewarding, and recounted her own experience of subconsciously noticing other people working hard and making the most of their time, collectively solving their own

learning difficulties, and discussing course issues and learning pathways with their teacher. This was a positive and defining moment in her school life. All participants agreed, moreover, that the community and collaborative approach to schooling contributed to the success of the tutorials. Students had access to a whole range of teachers beyond their tutorial 'adviser'. Thus, if they had a particular need, they could seek out a different teacher, whose specialist area could offer that knowledge.

Of the open, common spaces, Jenni reported that after a few weeks at the school, students became accustomed to other classes around them and ceased to pay attention to them, instead finding themselves focused and engaged. They all agreed that being able to sit anywhere encourages a mature approach to learning, but also realised that this could be taken advantage of by 'uncultured' (the students' term) students new to the school, which could be disruptive.

MEETING COMMUNITY NEEDS

- PRHS

Participants from PRHS described their engagement with their community to justify their work, and to portray the flexible environment positively. Mandy (Assistant Principal) claimed it is vital to relate their practice to evidence, thus looking at research to provide good grounds for their practice, including demonstrating the benefits to students. Tina (Deputy Principal) reported on significant challenges in the first year that, by the time of the research, appeared less problematic, although this perspective is in doubt, given some evidence noted earlier in this chapter. This evidence includes high noise levels.

Mandy argued that the staff were now much better at explaining their rationale, and were more confident about the learning programme and its ability to meet community and student needs. She also believed most parents were becoming more informed about the needs of twenty-first century learners/citizens and some were even quite charismatic about the potential of the programme design and school's design to support those needs. Nevertheless, staff participants were aware that a large number of parents continued to send their children to traditional schools in search of a 'better' education. Kirsty (teacher) pointed out, ironically, "the people that make negative comments about the school haven't actually been here yet". Critics point to the absence of traditional classroom design, large student numbers in the learning commons and inevitable questions about noise and

distractions. According to Kirsty, "some critics even question the safety of the students, in the absence of traditional controls over entrance and egress [such as a gated area]."

In response to their critics, the staff argued that the school is modelling real life, and that students have to learn to deal with distractions, soon realising what is important. They did recognise that the quality of teacher played a significant role in students becoming engrossed in what they are doing. For Neil (Principal), those people who continue to question the value of the open learning environment and students developing personal responsibilities, fail to realise:

> that they themselves live in a life that is open space. Everything we do is open space but then they expect, just because it is a school to be different. So there comes disconnection between schooling and real life and then we wonder why some of our students fail. Not that this is the only reason, but it could be a reason you know... have you got a bell in real life?

- BHC

Participants from BHC also expressed concern about meeting the demands of their parent community. Denise (teacher) pointed out that despite numerous community meetings, parents still retained the vision of their own experiences of education in mind, making the environment the first significant hurdle to move past. John (Deputy Principal) described how a parent evening session ended up with a question answer and abuse session that lasted quite some time and made the staff feel quite vulnerable to criticism. He explained that even though there had been a lot of work put into developing a vision and philosophy around the programme design, there were things that were still quite experimental and that required a radical shift in teachers' pedagogy.

Despite the parent community taking a little while to become accustomed to the design of the school, a sense by the teachers at the time of the research of the changing perception of the community was due to favourable reporting by the students. Six years on (from occupancy of the school), the community was far happier with the environment and style of learning at BHC. There seemed to the participants to be a dawning realisation that the environment is the catalyst for very different kinds of teaching approaches and learning programmes that could provide a solid foundation for students to gain 21st century skills and knowledge important for their future lives. There was frustration in both John and

Tina's dialogue, however. They both saw a void between people's understanding of spatiality, the style of pedagogy teachers bring to this environment, and the notion of 21st century learning. For Tina, the community needed to be further informed about 21st century learning models, by influential agencies, so parents could feel more confidence that their school is actually preparing their child in the best possible way for their future.

John pointed to the fact that the teachers had settled into a style of programme delivery that models both a traditional specialist subject orientated timetable along with a less traditional 'Colab workshop' flexible learning day, which ultimately signified a difference between traditionally designed schools and BHC.

CONCLUSION

The ability of participants to navigate the inauguration and administration of an innovative learning environment was initially premised on professional experience and understanding of 21st century learning and managing the spatial configuration of the innovative learning environment–teaching in open flexible spaces. Although there was some variation in the design and function of the practice environments, noted by the different spatial configuration and year level responsibilities, all participants initially viewed professional practice as constituted by sound curriculum knowledge and pedagogy. Their view of professional practice was, however severely challenged as they became engaged in exploring ways to make the open plan learning environments operate as effective teaching spaces and develop programmes of learning that reflected the implementation of 21st century learning theories.

It appeared that the pedagogic shift that teachers had to make from their previous experiences of teaching in more traditional school spaces to the open flexible spaces of the innovative learning environment was a significant step beyond their already established cultural understanding. Overall teachers did not feel they were well prepared for entering an innovative learning environment and even after several years some continued to struggle with aspects of teaching in these spaces. On observation, changing their views about 'what must be learned' as recognised in traditional didactic educational learning models, to understand the notion of learning, 'how learning can be facilitated', and 'what conditions best enable this to happen', have emerged as leading discourses in staffrooms of these schools. Ideas that accelerate learning democracy have inspired professional thinking and practice that has led to innovative pedagogies.

Participants found that in order to extend their scope of practice and work effectively, they had to engage in professional learning and behaviour adaptations around professional practices of collaboration, facilitation, sharing, working with groups and in teams—and at times across learning areas. This required that they adopt a way of teaching that meant they were in constant contact with students either through electronic means or physical presence. A focus and on-going discussion amongst participants was the notion of 21st century learning and what this actually looks like as professional practice. There were variations in its interpretation, and at times was considered as an ideology lacking a fundamental practice foundation. There were instances of participants citing their concerns about tightly controlled curriculum objectives and assessment expectations as potential barriers. Other participants believed that they could develop programmes to enable deeper, personalised learning.

For all participants open flexible spaces–the iconic physical configuration of the innovative learning environment–have produced a plethora of emotions and divided professional loyalties. Protecting a school's vision resulted in emotive resignations, interpersonal tensions, and a demonstration of constant engagement with reflective and restorative practices.

There is a hint of a pioneering atmosphere in the discourse of the participants that is also tempered by a sense of self-protection. Participants discussed elements of perceived practices [associated with student-driven learning pathways] that were interpreted in different ways by some parents and other more traditional schools as being too 'loose' or lacking 'rich content'. Participants expressed the sense of being under constant surveillance, including media scrutiny of league tables that recognise standards based assessment data as the only form of measurement of success—often in divergence to learning potential. Many participants adamantly supported other more valued forms of success-orientated mechanisms that do not necessarily include such an adherence to existing success recognition systems.

CHAPTER SIX

Space & Pedagogy

INTRODUCTION

With the previous two chapters I presented key findings from the designers of schools and those who occupy schools. This chapter extends these two analyses and brings together the two perspectives on innovative learning environments. I return here to material engaged with in Chapters Four and Five, the key literature discussed in Chapter Two, and methodological frameworks discussed in Chapter Three. This chapter aims to coalesce my empirical findings, my methodology and significant literature to arrive at new knowledge or original insights with respect to innovative learning environments. My contention is that studies undertaken to date have insufficiently engaged with the perspectives of the actual architectural designers of new school facilities and that by such focused engagement with designers, new insights into the effects and affects of innovative approaches to facilities design will emerge.

This discussion chapter is structured according to three broad sections: (i) Disconnections; (ii) The social production of space; and (iii) Living While 'Doing Education'. Disconnections focuses on the seeming divergences in the practices of architects, and the practices of educationists that emerged from the two findings chapters. A contentious co-production model that shaped the built environment was revealed in the tensions embedded between designed facilities and educational discourses on those facilities (what, in Chapter Two, was referred to as 'non-discursive' and 'discursive spatialities'). The disconnections are discussed in three sub-themes: Points of departure, places where relational dimensions break down; Designing, disruption and master planning, where dominant or hegemonic entities emerge; and Managing occupancy, concerned with how the entering of, organising for and engaging with designed spaces are governed.

The second section, the social production of space, analyses the forces of social production and social construction that shape educational environments. Such built environments are often encoded with intentions or aspirations, supposed uses and meanings, that are, at times, contradictory. Occupancy may be contentiously appropriated and encountered as theorised ideology, rather than as programmatic rationality. If we idealise the spatial configurations of ILEs, they exist independently of their genuine material relations. Three sub-themes emerge here: Space and practice, engaging the persistent and notorious binary of concepts and actual practice; spatial Intervention, considering the spatial and educational impacts of architects in relation to perceived practices of ILE occupants; and Social intersections, that analyse the spatial-educational practices of those occupying ILE facilities.

Finally, Living While 'Doing Education' aims to uncover the everyday situatedness of sites of learning. Mostly, teaching and learning happens quite unreflexively, the utter familiarity of places of learning habituating not only our understanding of knowing and doing, but also delimiting the horizons of what we know or seek to know. ILEs disrupt these habits and horizons of familiarity. The everydayness of 'doing education' then becomes a contested space of what is experienced and socially constructed by users and circumstances that socially produce ILEs. This section too has three sub-themes: Interacting with space; The reality of everyday practice; and, The distraction of idealism. These focus on an ontological disclosure to demonstrate the spatial character of education and being educated, and to understand the complex interrelationships that are encountered when commissioning and occupying ILEs.

SUMMARY OF FINDINGS

To begin I briefly summarise the findings outlined in Chapters Four and Five that highlight the following five key issues: (i) tensions between architects and those who subsequently occupy school facilities; (ii) design process; (iii) the professional appointment process adopted by the two schools; (iv) transformations in teaching and learning; and (v) teacher and student responses to the innovations they developed.

Tensions

The two sets of findings have a curious and important tension between the architects' perspective and the educators' perspectives. In discussing their relative freedom to disrupt the spatial configurations of traditional secondary school facilities, the architects implied that their designs are (by default) helping to drive spatial reform, and by implication curriculum reform and teaching practice reform. They were not saying that all architects do this but with these two schools this was the case. The participant teachers, on the other hand, noted they are struggling to make these spaces work, that they do not feel they are necessarily at home in these spaces and certainly have not had input into their development. They also seemed less well-informed about the work of architects, whereas the participant architects certainly felt at liberty to discuss teachers and the general state of education.

Design process

Just delivering a spatial configuration for possible functions was the farthest thing from both architects' minds. They were intent on engaging with their stakeholders to establish crucial design parameters for pedagogy, values and practices important to the development of the building brief. The architects displayed, however, their frustration at the lack of information from the key stakeholder, the Ministry of Education, finding its design briefs to be very open-ended. They also articulated a distinct lack of confidence in the ability of the MOE to guide, direct and apply change management strategies to ensure that educational professionals were prepared for the design process. They were thus surprised that curriculum advisors and the Property Division of the MOE did not appear to be in communication with each other.

Consultation with the architects at the two selected sites was left to the Establishment Boards of Trustees (EBoT) of those schools, made up of representatives from the teaching profession and community members, under the guidance of the Property Division of the Ministry of Education. Thus, there was an elevated expectation by both design firms that the limited guidance provided by the MOE, based on twenty-first century learning ideologies, would be clarified by interactions with the EBoT. The architects realised, however, that finding clear articulation of twenty-first century learning, pedagogy and practices was problematic. The architects were required to take more control of design meetings, and developed strategies for promoting innovative ideas that, at times, intentionally challenged traditional approaches to education and building design. By overtly pursuing this approach, EBoT interactions sometimes became confrontational.

Adding to this frustration, while the architects were keen to engage with teachers, they realised that teaching staff were employed by the EBoT on a graduated employment model, whereby first the Principal, then the senior leaders, later the middle leaders, and only lastly, the teachers, were appointed. These appointments took place well into the design and build process, therefore, there was very little educator contribution to the spatial configuration of the building. The architects felt that the design period would have been a valuable time to have dialogue on space and pedagogy and have teachers productively contribute to that thinking, thereby making the design process an iterative event, instead, those destined to occupy the designed environment were excluded from the design process.

Professional appointment processes

For one school that had occupied its facilities for just over one year at the time of the study, preparing to employ teachers for the ILE and establishing key values that identified a functional education approach, dominated the pre-occupancy stages. Rethinking strategies and structures associated with learning programme design and identifying the kinds of skills and dispositions that teachers require to work in such close proximity and in such open flexible spaces, were key considerations in both schools. Teachers spoke of significant 'mind shifts' from previous teaching experiences, shifts for which they did not actually feel prepared. There was an implied motivation to rethink teaching practices applied in other schools and, through carefully constructed induction programmes, teachers were encouraged to engage in readings and discussion on collaboration, conflict resolution, transformative thinking and co-constructive pedagogies.

Transforming teaching and learning

Participant teachers discussed constantly having to review their pedagogic approach to 'facilitate' rather than 'deliver' content knowledge by providing for more personalised learning through deep authentic challenges and enquiry. They described excitement and chaos, continuous learning and situations of failure, and throughout their conversations they reflected an honest account of positive and negative experiences and perspectives. They had to adapt to noise in large open spaces, and initially the parent community felt these spaces would be inappropriate for their children's learning. While they struggled to create innovative learning programmes, for example, cross-curricula integrated learning, they enjoyed the less formal interactions with students. Both students and teachers commented on the benefit of informal student-teacher conversations that were a product of the open plan environment where serendipitous, incidental, or deliberate interactions occurred.

Teacher and student responses to change

Quoting reasons associated with tightly controlled accountability protocols, such as specific curriculum content, assessment conditions and community expectations, teachers often had to resist defaulting to didactic forms of delivery, which they regarded as contradictory to the intention of an ILE. Some teachers sensed they had retreated from exploring innovative teaching programmes in favour of defaulting to single-subject courses. At times this was

accomplished using digital technologies and creating isolated areas within larger open-plan spaces. There was a general feeling that ILEs are not being used to their potential. Teacher leaders expressed concern about teachers as learners, suggesting that the teaching profession has much to learn about dealing with challenges to traditional pedagogic approaches. Fears were expressed regarding the lack of teachers who are ready to teach in ILEs, leading to a questioning of the relevance of graduate teacher courses and professional development programmes. Students, on the other hand, expressed their enjoyment of the difference ILEs have made to teachers' demeanour and noted their enjoyment of learning experiences.

The two schools that were the focus of the case are different in design and there is a variation between levels of students attending those schools. The transcripts from interviews produced contrasting discourses, exposing differences and similarities in architectural design practice and teaching practice. These findings, including the lack of congruence between findings of Chapters Four and Five, will now be discussed in depth.

DISCONNECTION

Points of departure

The lack of congruence mentioned above highlighted a tension and complexity and contributed to points of departure of understandings of practice between educationists and architects. This resulted in designers and those occupying designs having very different capacities in the design process, very different involvements and, at times, very different understandings of what design is aiming at doing.

Relationships

For the architects, there was a sense of freedom to explore innovative ideas for new school designs. This was due to having such open-ended design briefs that disregarded any notion of a narrow design typology, or established design precedence. They expressed their excitement about engaging with the educational community in discussion about progressive changes in teaching and learning practices. As Nair (2002) argued, a school building is but one component in the larger educational machinery. Kurt and Ian, the architects, were not blinkered or exclusive in their approaches, and were well informed and open concerning not only design processes for schools, but also current debates in pedagogy, the structures

and limitations of the MOE, teaching cultures in schools, and Ministry-driven community structures that govern the establishment of new schools and ongoing management of existing schools. Each architect had been associated with school design for over twenty years and had followed international research on learning environments. Hence, they held that their experience had prepared them well for the consultation process with key stakeholders.

In entering the consultation stages, the architects, each in their own context, came to realise that the EBoT they each worked with was limited in its awareness of and experience in twenty-first century learning practices. Design team stakeholders were confined to MOE Property Managers and the EBoTs. As recognised by international researchers, Taylor (2002), Lackney, (2005) and Nair (2002), architectural practice of designing schools significantly relies on building resourceful relationships with stakeholders to ensure the resolved outcome will be engaged as intended. Stakeholder relationships in the schools in this study were limited, and at times fraught, resulting in outcomes that were anything but intended.

Disjuncture

Spatial design is not simply concerned with spatial distributions for things to happen (Lefebvre, 1991). Design orchestrates or conducts practices. Such orchestrations may be those of control or of subversion (de Certeau, 1984). In this sense, and from the beginning of the design process, the architects sensed potential disjuncture as points of departure. The EBoTs were expected to depart significantly from what they were familiar with in traditional educational practice, especially so in secondary schools. This departure was from cellular modules with segmented curricula content. The move was to a more symbolic—open—understanding of what a learning space could be. De Certeau (1984), in discussing the fixity or flexibility in defining spatial identity or sense of place, suggests: "to walk is to lack a place" (p. 103). This poetic openness or potential in departing suggests that EBoTs were being posed deep questions about traditional and fixed understandings of strategic and habitual practices of educational control. The architects were, perhaps, aiming at subverting the fixed cartography of educational mapping that comes from above, ingrained regulatory understandings of spatialising practices. In their place the architects, in de Certeau's terms, aimed at pedestrian—rather than God's eye—viewpoints from below that open potentials for creative and manifold behaviours.

Poor communication from the MOE concerning design briefs, and strained relations with EBoTs, led to architects positioning themselves as protagonist, leading at times to controversial discussions about new learning theories, as well as introducing new approaches to spatial configurations for ILE design. Such spatial configurations presented opportunities for new and exciting pedagogical approaches for twenty-first century learning, but ironically, the architects could not engage with those who would be teaching in their designs, being confined to conversations with minimal teacher representation on EBoTs. Taylor (2002) argued the importance for education to respond to significant changes in society, and to reflect human needs, and for this to happen effectively requires a community ready to engage in deep conversations that foster a positive atmosphere for new curriculum ideologies and pedagogies. From their own professional expertise, evidence from international research, and information from the MOE, Kurt and Ian were in little doubt that education is in a time of substantial change, requiring change to the spatial configuration of schools. They felt obliged to support change that transforms practices of teaching and learning.

With this obligation, the architects engaged in processes of design consultation, while recognising an air of caution in their EBoTs. Ongoing resistance to change from education stakeholders is clearly documented in research from Washor, (2003), Wolff (2002) and Clark (2010), who established that there has been significant resistance to environmental change that impacts on teaching practice. Educational discourse and practice have been slow to respond, suggesting that facilities design or innovation adds little to education process, dismissing the need to change learning environments and educational practice. Nair (2002) pointed to the ongoing significance of failed experiments from the 1970s with 'open classroom' models of school design. ILEs are parcelled with these earlier innovative architectural explorations, with educationists 'remembering' noise levels and crowded spaces as especially unmanageable for learners and teachers.

Disparity of positions

For this reason, Ian and Kurt were met with mixed reactions when advancing ideas for open flexible spaces that are more suited to new learning theories. The respective EBoTs struggled to move beyond the long-held perspectives of certain individuals, despite vigorous debate on current global perspectives on educational thinking and educational delivery, which the architects used to challenge some of these traditional positions and views. At the most basic level of challenge would be Taylor's (1993) notion of a 'three-dimensional

textbook', which conceptualised educational architecture and its surrounding environment as having the capacity to teach. Therefore, square footage is not a design driver; rather the curriculum and student learning needs are. Even this, arguably, was too much for some EBoT members to bear. For Sanoff (2001), engaging with an EBoT actually limits participation with key stakeholders, holding instead that the professional body constituting principal, teachers and community members who will be using designed spaces should be involved in this consultation. Lackney (2007) warned that once a learning environment is completely occupied, many occupants—due to exclusions from design processes—may be unaware of the myriad ways a school facility has been designed to support teaching and learning.

Influenced by notions that student interest should be a key consideration, and that learning environments ought to be designed with their possible futures in mind, Ian promoted an idea for the design of BHC. His understanding of urban-scale modelling and contemporary approaches to commercial office design were enriching for the project's design development. In this respect, there is a symbolic dimension to the identity formation or meaning of the BHC project that elicits, through resonance with advanced notions of commercial office design, potential futures for current students. This somewhat speculative approach to symbolic identity of a structure was at odds with the EBoT's own symbolic dimensions, confined to spatial orderings based on industrial models of education, discrete subject disciplines and functionalist educational administration as top-down programmatic control. Thus, for the EBoT Ian's proposal offered a proposition contrary to established norms of spatial distribution coincident with how power is exercised in educational facilities. In Lefebvre's terms, representations of space and the production of representational space in spatial practices were contestable ideas (Lefebvre, 1991). There was little coincidence for Ian and the EBoT on what defined a social imaginary in the production of social space. In de Certeau's terms, Ian confronted the EBoT's strategies of spatial control with tactics of manifold resistances (de Certeau, 1984).

In this instance, and in consideration of the EBoT's dilemma, space is no longer the domain of mechanisms of disciplinary regimes of 'the school' or 'the office block'. Space becomes a contestable social production, at once real and imaginary, functioning and with a symbolic dimension that is open. Hence Lefebvre (1991) provides a structural perspective, derived significantly from Marxian dialectic understandings of economic and social production, for analysing Ian's design proposition. Representations of space are developed

according to a design precedent found in the contemporary office block. Representational space is constituted as the social space of those who use the facility: teachers and students. This production of space is both passively encountered and actively experienced as spatial imagination and social thought, together with spatial practice, the experiential encountering and deciphering of spatial relations in 'doing education'. As a designer, Ian's own spatial imagination aimed to tap into and to trigger potentials for students' future-oriented thinking about their own 'designed' futures, spatially conditioned by the horizons of their lived experiences.

Hence, Ian's application of a commercial office project as model for BHC presented a challenge to the EBoT with regard their social imaginary for 'doing education'. Ian's discourse had already abandoned traditionally held notions of teacher-centred approaches and traditional disciplinary mechanisms of classroom design and isolated subject areas. He was more interested in creating connections. Again, in turning to de Certeau (1984), emphasis is given to moving from strategic interest in macro controlling forces to granulated and individuated tactics of freedom. Such tactical approaches are always already engaged with strategic momentum in terms of re-appropriations, small acts of recovering agency in learning.

The EBoT at BHC were initially disconnected from the precedence model of a commercial facility, and were unable to make the transition from open-plan and flexible office space to educational space for twenty-first century learning. Thinking design futures requires a challenging 'mindset' and the rift that occurred in the design team was irreparable, prompting the MOE to reconstitute this EBoT. After this change in personnel, Ian's schema was more readily accepted. The design schema for BHC, based on the commercial office configuration—also developed by Ian's firm—as a defining potential for student encounter with work place futures, had in its open plan a centralising communal locale that Ian called its 'heart'. Ian looks for the 'heart' in each of his projects, that unique crossing or strongly relational zone that centres and disperses at the same moment. This sense of locale is based on Ian's enthusiasm for encouraging people to make connections through facilitating a culture of cross-domain interests. We could name them everyday practices, pedestrian footsteps of those for whom an educational environment is a locale of lived relations before it is perceived as a hierarchical institutional facility (de Certeau, 1984). The experience of working across domains has helped designers engage in critical

discourses with stakeholders, and especially so in twenty-first century educational thinking. The initial EBoT was ill-equipped to engage in such discourse.

Professional knowledge

Kurt claimed to be better informed about curriculum innovation than many on the EBoTs with whom he had dealings. He voiced his concerns regarding who had final responsibility for educational issues in this situation, questioning the de-facto responsibility of an architect to be protagonist in moving educational practitioners into new ways of thinking and practicing. The findings clearly identify concerns with communications between stakeholders, and wide variation in understandings of innovative learning theories. This emerged as a point of frustration for Kurt indicating that these situations require a call for professional definition of designer and curriculum expertise. Setting out to form exciting professional collaborations, Kurt and Ian not only felt a collaborative disconnection, they also felt constrained, restricted in their possibilities, and disappointed with the lack of reciprocity of professional exchange.

Kurt claimed that often his innovative approaches were challenged by those on the EBoT who had a teaching background, who asked for evidence that such innovations actually work: 'show us examples where these kinds of ideas boost student performance and learning'. At that time, the MOE had not evaluated innovative facilities for their contribution to student performance, thus no hard New Zealand evidence existed to meet this challenge. Only recently has empirical research surfaced that evaluates modern learning environments for learning progression—for example, Terry Byers Doctoral Research completed in 2014 (Byers, 2014). In synthesising empirical data on student learning across two different sites, Byers established that spatial difference can have significant effect on students' attitudes to their learning, learning experiences, student engagement and learning outcomes (Byers, 2014). Moore and Lackney (1993) and Edwards (1991) had found that there was correlation between improved facilities and improvement in standardised tests. They produced sets of design considerations for new schools, though these have more to do with comfort and aesthetics than with spatial modalities as agencies of educational potential. More generally, in studies that look at spatial distributions in educational facilities, methodological approaches tend to have an implicit spatial ontology characterised as one that defines space as residual container (things happen in space) or housing for events such as learning and teaching, administration, recreation and so on. This research broaches

another ontology of space, emphasising space-as-practice and as agency defining relations of power.

The inherent contradiction of this situation relates back to informed discourses. In the architects' opinion, they had invested more time into researching current literature and design practices relating to new models of school design than did the EBoT or MOE. This placed the EBoT and architects in precarious positions as each institutionally had particular relations of power, as well as finite capabilities for determining eventual outcomes. The overall process of design of physical environments seems left to architects to guide decision-making that may or may not be appropriate for the needs of future-focused learning, or the community of students, or the cultural capital of educational professionals. Without depth discussion between educationists, especially those with curriculum expertise, and designers, interpretations lead to unfulfilled potentials rather than effectively equipping both disciplines with critical awareness about design and master planning and their possible disruption.

Designing, disrupting and master planning

The architects seemed to recognise how straightforward it was to design or re-design facilities, to achieve innovation or flexible learning delivery. They equally recognised that design was for occupancy and use. Yet the genuine obstacle seemed to be in developing innovative practices of occupancy. Both architects were aware of their pivotal mediating roles in supporting the transformational effects, or agency, of school spatial design in response to changing pedagogical theories and practices. Those change practices are driven by the Ministry of Education (MOE, 2011), under the rubric of twenty-first century education, requiring a significant re-think on how we 'do' schooling (Bull & Gilbert, 2012). Though what the MOE insufficiently emphasises are the essential relations between practice and spatiality developed in various ways, for example, by Lefebvre (1991), de Certeau (1984) and Foucault (1980), whereby practice is always already situated and therefore spatial. Crucially, social or cultural space is produced via practice. In this sense, a curriculum-reforming document that demands transformative practices equally demands transformational spacings.

The architects for these case-study schools maintain they have engaged in iterative design processes that evolved radical spatial configurations to support innovative ways to teach and learn. Taylor (2002) drew attention to the inherent difference of earlier design practices,

wherein educators and architects had well-defined typologies for school configurations, with prescriptive specifications written for architects. With the two schools in this case study, the architects enjoyed the freedom to develop spatial configurations rejecting cellular models of teaching and learning.

The participant architects experienced at once keen anticipation *and* disappointment on finding they were limited to working with an EBoT and MOE Property Managers throughout the design process. A euphoric sense arose from being given freedom in design thinking and, as Ian said, it was 'exhilarating' to occupy that place. Yet there was also disappointment due to their realisation of a lack of deeper rapport with teachers, as 'we love having conversations with teachers'. Equally, they regretted the lack of opportunity to connect with students, and a wider community of educators. As one architect had noted, teachers manage to turn a 'problem into a positive'. Even though there was teacher expertise on the EBoTs, that expertise was not destined to occupy the new learning facilities. Clearly, foundation schools require an establishment board, it also being impossible to consult with a teaching staff that does not yet exist at the design stage. This is not the case with minor or major redevelopments of existing schools, as their BoTs, along with teaching staff and students are available for ongoing consultation during the design phase. It could be suggested that the MOE prudently or imprudently avoids appropriate teaching staff consultation for 'greenfield' development projects. It is certainly the case that both architects saw this as a glaring omission. While this omission meant full stakeholder input was impossible, it nevertheless assisted in the 'liberation' of architectural innovation.

The data indicates that Kurt and Ian offered differing perspectives on this matter, however. Kurt appeared frustrated, disillusioned even, when recounting conversations he had with teachers on other design projects. He found teachers to be unprepared or perhaps disinterested in depth or global thinking on education, on pedagogical innovation and educational delivery. Teachers seemed to be caught up in the narrowness of their everyday practices and concerns and this meant they were often unable to reflect on genuine innovation. Rather than consult with teaching staff, Kurt resorted to developing detailed discussion with others he considered more 'enlightened', for example, an ex-principal he knew and his brother, a Professor of Education. Ian was somewhat more positive about his experiences of working with teachers and students with whom he has consulted. He genuinely displayed respect for their work and what they have to offer architects by way of design innovation. Ian mentioned more than once that in consultation with teachers and

students they often unblock problem fields or obstacles on the 'pathway' to design resolution—design breakthroughs come from those most intimate with the problem field.

Again, this correlates with research from Lackney (2007), Taylor (2002), and Wolff (2002). A resolved design solution displays coherence between the design of structures and pedagogical theory and practice. For the two schools in this case study there was some further variation between approaches by each architect. Kurt indicated that where possible he aims in general to commence with stakeholder consultation as a means of establishing how teachers work, defining their spatial practices as pedagogical practices. Though he emphasised that, in his experience, responses are inadequate, or too narrowly concerned with empirical spatial detail rather than reflection on the spatiality of teaching and learning. He then realised, going forward, that it is up to him to provoke debate and provide the concrete means to innovative practice. Ian, on the other hand, who encourages debate and enjoys discussion, generally had found teachers are reflective and innovative in relating spatiality to pedagogy. He was able to make positive connections with previous school design engagements, along with other design projects as potential directions within an educational context.

International studies suggest that architects are currently the drivers in the development of ILEs (Fisher, 2005; Lackney, 2007; Nair & Fielding; 2005; Sanoff, 2001; Tanner; 2001; Wolff, 2002). Of course, one expects architects to be the major 'drivers' for spatial innovations. After all, that is what they are trained to do. Research—including this study—suggests, however, that architects' design approaches are equally informed by their interpretative understandings of curriculum innovation, thereby opening innovation into a design schema on two 'fronts', innovative spatialising and innovative curricula. Kurt and Ian maintained they were instrumental in driving the conceptual design stages for the development of the spatial configuration of each school along with the potentials carried in those designs for radical innovations in learning.

Dovey and Fisher (2014) discussed important architectural distinctions in their analysis of the conversion of traditional learning facilities to more open and flexible spatial models. Using the spatial and political theories of Foucault (1979, 1980) and Gilles Deleuze (1992), Dovey and Fisher developed a series of design typologies that account for various models of spatial transformation responding to curricula innovations. They noted design emphases on the 'convertibility' of spatial configurations as opposed to design emphases on the

permanence of open planning. Reflecting on Foucault's disciplinary mechanisms and Deleuze's work on societies of control and social theory to understand an architecture of connectivity and flow, they pointed to the deficit of typologies that emphasise convertibility, as such models maintain, rather than eliminate, the disciplinary technologies of spatial control. They noted: "architectural capacities for 'convertibility' from one pedagogy to another are distinguished from properties of 'agility' or 'fluidity' that enable continuous adaptation between learning activities" (Dovey & Fisher, 2014, p. 43). Importantly, both Ian and Kurt were acutely aware that student-centred pedagogies are seriously constrained by traditional classrooms thus firmly believed that it would be a strategic mistake to express design intention for pedagogical conversions, rather expressing a design and pedagogical commitment to making congruent adaptations both spatial and pedagogical. Relating critical literature to research findings adds complexity, but also adds critical positions that offer productive analysis contributing new knowledge and understanding to the field. This is particularly so when discussing the concepts of new pedagogies that are yet to be fully realised, or in the context of the rhetoric surrounding agile environments for learning.

Hence, in the innovative configurations of ILEs there are 'agile' and 'fluid' ongoing events—agencies and resistances—in shuttling between spaces whose agency produces social relations, and educational practices whose agential powers are dispersed through heterogeneous acts of knowing-about, Being, and 'doing education'. Yet such occupation of a school takes place slowly, incrementally, with many possible or probable moments of resistance. It commences once the final design has been signed off by the MOE, although the beginning of that process starts with the appointment of a Principal by an EBoT. Already this process contradicts the one emphasised by Lackney (2007) with respect to educational commissioning. Lackey advocated for educators to be appointed well before pre-design stage. His reasoning was to better inform architectural programming, and extend possibilities for facility planning, including construction stages through to the occupancy of the building. He regarded this to be a model for research, action and training encompassing and paralleling the entire building delivery process. It is a means of embedding curriculum development, as well as providing a framework for assisting teachers in using innovated facilities as 'three-dimensional textbooks' (Taylor, 1993). But with reference to the case study schools in this study, were there 'agile' and 'fluid' encounters with innovation, or resistances to school occupancy?

Managing occupancy

> More often than not, occupants of schools, teachers, administrators and students alike use the school facility with a WYSIWYG mentality ('What You See Is What You Get'), not realizing the full potential of the school facility for learning. (Lackney, 2007 p. 1)

The relatively few ILEs already constructed and in use in New Zealand are a radical departure from the majority of other schools. The design of ILEs involves defining a range of new learning spaces that are variously termed 'learning commons', 'meeting spaces', or 'streets', where learning interrelationships and social relationships overlap. This radical change in spatial configurations and educational thinking has resulted from a review of pedagogic practices and curriculum construction in New Zealand. Their occupancy and planned broad implementation equally require further review of pedagogy and curricula. Indeed, as more ILEs are built, staffing these schools has become a significant challenge. Teachers employed in these schools require a mind-shift and willingness to engage in very different practices from those previously learned within cellular classroom configurations. As indicated in the literature, especially Taylor (2002), effective leadership of innovative environments is significant for their success. The leaders of the two schools in this case study found it vital to choose staff with educational skills and understanding quite different from those expected in more traditional school environments. They emphasised innovative pedagogy, change management, relationship building, adaptability, and crucially an ability to dismantle and rebuild previously held notions of education and learning.

The senior leaders in both schools were all highly experienced teachers, though they did not have any prior experience of an ILE. Yet they suggested that prior experiences within education did prepare them well for embracing and managing change. John and Tina (BHC) emphasised that working with 'progressive thinking people' enabled them to contribute to the vision of the school and add to curriculum constructs. For Neil and Mandy (PRHS), their work on changing timetable structures, conflict resolution and building student achievement and self-managing skills was important. Though they felt confident about managing an ILE, their experience also made them realise that being employed in an ILE would be a significant challenge for staff less inclined to embrace change. Staffing a school with such different spatial configurations required a radical review of learning programme design and curriculum implementation, supported by innovative teaching approaches. To prepare themselves, the leaders engaged in reading twenty-first

century learning literature, visited a number of schools both nationally and internationally that were identified as 'innovative' and developed discussion groups where they could question and reflect on transformative support mechanisms. Blogs and roundtable discussions were utilised as a way of sharing existing and innovative practices. These needed to be places of honesty, safety and openness for genuine progress to be made.

The school leaders realised that they needed to re-think how they 'do' schooling, as Bull and Gilbert (2012) emphasised. Wolff (2002) noted the need to change learning processes, from traditional classroom-based, discipline-focused learning-by-listening, to a just-in-time, life-and-work focus, and learning-while-doing approaches linked to 'everyday' situations. There are two important emphases to Wolff's findings: Firstly, with reference to a real-life work focus, it is worth reflecting on Ian's conversation about the design phase of BHC and his reference to creating learning environments whose typology is that of contemporary commercial or industrial work spaces. Ian incorporated this concept into the school design as 'future-proofing' the lived spatiality of students as they transition to a working life. Secondly, Wolff's emphasis on the 'everyday', and 'learning-by-doing' exemplifies critical analyses by Lefebvre and de Certeau on spatiality, social practice and the everyday, further discussed in this chapter in later sections. Effective implementation of Wolff's innovative learning processes requires a significant pedagogic and curriculum shift towards student-centred learning approaches, not necessarily current in a teacher's 'tool kit'. As Dianne (BHC) pointed out, there was a distinct difference in what she had learned as a teacher trainee and, indeed, in her experiences as a teacher, to what it was like to work in an ILE.

There were various strategies for approaching this 'training-deficit' 'problem'. Neil from PRHS described a notion of de-schooling as a way of encouraging his leaders and staff to see beyond the existing educational paradigm and question its relevance for preparing learners for their future. Bull and Gilbert (2012), like Wolff, acknowledged that new approaches are required if young people are to develop innovative dispositions to learning, and work productively to engage in a rapidly transforming lifeworld. Neil implemented a new staff induction programme to help teachers relinquish their beliefs and practices. He admitted many new teachers found this process challenging claiming that

> de-schooling involved throwing out what you know [about education, and to] empty out your head the paradigm of...one class...one teacher, one subject, one set of activities, one piece of assessment...[and so] create a new view of what teaching and learning is like.

In contrast, John from BHC emphasised deprivatisation of practice as a way of working successfully in open-plan learning spaces, noting collaboration as being essential to support the shift in teachers' attitude. Deprivatisation of practice refers to the ability to work effectively in open spaces where teaching practice becomes highly visible with other teachers in close proximity. Deprivatisation challenges traditional educational processes that are unreflectively private. The privacy of teaching accounts for a non-threatening milieu within which a teaching identity is not challenged, except, perhaps, by students, but certainly not by other teachers. Hence, deprivatisation of practice refers in general to the idea that teachers, to a greater or lesser degree, need to share with other teachers their teaching practices and therefore their beliefs about teaching and learning. Teachers applying for positions and being employed at BHC were not necessarily equipped to operate in such a way, as they had come from traditional secondary school environments where they had only operated 'privately', in single-cell classrooms.

By not having been part of the design team, the new principal and senior leadership team were required to work through a process of configuring a teaching and learning programme that accommodated the spatiality of the school's physical design. It became an even greater problem when teachers were not well prepared for engaging with open flexible spaces with up to one hundred students at a time. Working alongside another teacher in an open-plan configuration was confronting and, as Dianna commented, 'intimidating'. Neil and Mandy specifically generated interview questions to explore applicants' 'mindsets' as a strategy to staff their school with teachers who were more likely to be able to adapt to an ILE and be active contributors to the school's mission and vision. Exploring a prospective teacher's 'mindset', along with the identity challenges in practices of deprivatisation or deschooling suggest that what is genuinely at stake is more than the complexities of new spatial configurations and new curriculum approaches, as challenging as these are. The very question of identity itself is challenged, along with questions of resistances that accompany such challenge. I next want to explore this issue of an educational identity in more depth, in terms of symbolic structures.

THE SOCIAL PRODUCTION OF SPACE

> Research indicates that [...] regardless of improvements in classroom size, spatial configuration, physical features, furnishings or equipment, traditional patterns of direct instruction persist. (Nair, 2002 p. 3)

With the opening section of this discussion chapter I have emphasised a series of themes concerning dissensus, disconnection or disruption. These range from collisions of the differing worlds of architects and educationalists, confounding of expectations of those destined to occupy ILEs in terms of preparedness and training, and the shifting ground in the very identity formations of education facilities and staff, with practices of deprivatisation and de-schooling. This section of the chapter analyses the forces of social production and social construction that shape educational environments. Those forces emerge from innovative designs that give identity to educational facilities through formal structures, which may or may not be within the spatial language or codes of those who occupy facilities. This includes not only what one can recognise as formal characteristics of a learning facility. It also takes in what one is as a learning facilitator.

Equally, those occupants provide further interpretative coding when they provide innovative programmes frameworks for students. ILEs challenge many of the fixed assumptions of traditional schools and schooling: age groupings, subject groupings, teacher-expertise, and spatial inflexibility. In so doing, emphasis falls on the differences rather than on the repetitions of sameness, foregrounded in traditional and authoritarian schooling. This section addresses three key sub-themes. The first approaches the persistent division of theory and practice; the second considers the spatial and educational impacts of architects' designs in relation to perceived practices of ILE occupants; the third uncovers the everyday situatedness of educational practice within an ILE.

In my analysis, the social production of space includes social, economic, ideological, and technological functions that produce the material context of those engaged in educational practices. Social construction infers the phenomenological experience of space and its transformation through participant exchange, memory, imagination and everyday use. Social production and social construction of space is contested for economic and ideological 'reasons' that are not necessarily theorised but are rather pre-conceptual.

Lefebvre (1991) argued that space is a social product, or a complex social construction based on values and the social construction of meanings, which affects the spatial agency of practices and perceptions. With this in mind, whoever engages with questioning ILEs, from researchers to designers to teachers to students, always already brings to particular spatial representations, modalities of understanding, pre-structures that intersect with living more generally.

The ILE as an invention engages its users in processes of socially producing space through teaching and learning. The architects, Kurt and Ian, saw design as a key agent in orchestrating significant change to practices of learning. These transformations may be termed ideological (Giroux, 1989) inasmuch as they attempt to define/influence the meaning-making constructs of those occupying space engaged. Giroux (1989) refers to ideology as the ways in which meanings are produced, mediated, and embodied in knowledge forms, social practices, and cultural experiences. In comparison, and using the city as context, de Certeau (1991) suggested that designers and political elites negotiate and enact competing futures for a city. Yet these are rarely consistent with daily spatial experiences of inhabitants. Hence, the ethical and political differentiations of strategic and tactical resistances.

Space and practice

We may think of ILEs predominantly as physical facilities, designed spaces that have grown out of MOE policies to encourage teaching and learning practices that focus on the preparation of students for a twenty-first century knowledge economy (Ministry of Education, 2007). And this would hardly be incorrect. Do we, however, consider such facilities as mere physical containers for the spatial relations and educational practices within, and thus evaluate the facilities for their ability to support curriculum-driven learning and teaching? Or, should we rather ask what 'doing' education means in these situations, as essentially spatialising practices? This opens us to considering symbolic formation within ILEs, to spatiality as process and practice, and inevitably, to consider the binary divisions between theory and practice.

The MOE Designing Schools in New Zealand Guidelines 2011-2021 (MOE, 2011) acknowledges some relation between spatiality and effective learning. Research into teaching and learning suggests spaces for learning are important to successful learning outcomes and that effective learning happens in many contexts. More importantly, it

suggests the design of schools must recognise this reality, inasmuch as innovative teaching practice is aligned to this understanding. Yet Dianna (BHC) referred to the lack of change management that has occurred to adequately prepare teachers for such radical difference in teaching theories and practices for working in an ILE, suggesting that people had not quite anticipated the degree of learning that there needs to be for teachers. Citing 'team teaching' as an example of what he regarded to be an essential disposition for open-plan spatial configurations, John recognised that the spatial characteristics of traditional school environments cannot cater for the successful implementation of team-teaching

If, as Lefebvre (1991) claimed, space is a social product, and once produced becomes a horizon for thought and action, then social production can also become a means of control, domination and power. The cellular classroom model produces teachers adequately prepared for delivering rich single-subject content, where teachers are able to apply techniques that can be interpreted as implicit subordination of space and time. Lefebvre (1991) rejected a 'Euclidian' notion of space, that space reduced to empirical measure as a determinate container. On this view, space is homogeneous and empty, waiting to be filled by 'things'. Similarly, time becomes simply clock-time reckoning and not lived duration. Such practices are contrary to precepts of twenty-first century learning, where space-time is evental *and* processual, where there is no simple division between a world of things to be used and a world of subject-agents. Rather, what is foregrounded in the current century is a complex set of cultural, economic and social transformations that have brought about a counter current in critical thought that makes the subordination of space-time less tenable. ILEs are designed to liberate learners, supporting them to take control over their own learning pathways. If space is socially produced and made productive in social practices, and students have greater autonomy to contest and contribute to the social production of space, then teachers equipped with traditional models of practice will be challenged to maintain equilibrium [continue to practice how they have always practiced] with student capacities for adaptation. It is thus relevant to emphasise why Bull and Gilbert (2012) ask the question concerning teachers' dispositions and competencies in relation to those they are being asked to develop in their students.

In reference to de Certeau's strategies and tactics, it is possible to analyse the transcripts of school leaders, teachers and student for evidence of strategic discourse and tactical utterances. Strategic discourse comprises 'official' discourses within which producers of social relations engage, for example in planned structures comprising curricula or spatial

segmentations in mapping school functions, the classroom, the staffroom, or the street-like corridors. The tactical is at another level, and comprises unofficial discourses, peculiar mixtures of factual understandings, reverie and social-mythic narratives by which students' and teachers' lived experiences negotiate the strategic, and practices that act to subvert the strategic intent of officialdom.

For instance, John (BHC) recounted that particular teachers were resorting to fabricating traditional classroom learning structures they would be familiar with, by the tactic of shifting whiteboards to create temporary walls, thus undermining the strategic intent that educational delivery occur in shared, open, space. A BHC colleague, Murray, explained the difficulty of cultivating a non-traditional teaching style in some specialist subjects. Such a style could be ideologically informed, or grounded in regimented and approved practices or be one's unique (and sometimes tactical) approach. A teaching style is thus a pre-structure that composes the meaningful world of a teacher. Murray's concern revealed itself as his anxiety in relinquishing control over content in subject areas that, to him and all he knew, seemed to demand the well-defined ordering of knowledge. Murray cited the challenge of providing meaningful questions to students to guide them in addressing complex technical problems. Giroux (1989) had argued that the concept of ideology becomes useful for understanding not only how schools sustain and produce meanings, but also how individuals and groups produce, negotiate, modify, or resist them (Foucault, 1981).

At the same time, though, other teachers were constructing new teaching styles, adapting to conditions of collaborative teaching and student-led learning. To do this they needed to resist their former ideological constructs, and contribute to the development of new social relations of production that, in turn, were coming to characterise the concept of 'teaching space' wholly differently. Susan (PRHS) described how the teaching approaches she had previously used worked well in different more traditional environments, but because they did not work well in an ILE, she had to completely rethink the way she taught, legitimising that teachers, too, feel the pressure of strategic ordering, necessitating having their tactics. She emphasised the need for constant reflection on how she was teaching as it became less didactic and more co-constructivist. Crucially, her own learning was based on trial and error, rather than being formulaic or top-down instructional. In this case, Susan's reflective practice cannot be simply considered as theoretical reflection on a set of doctrines, but rather as an embodied medium through which she aimed not so much to be an educator but rather to do education.

Crucially, students recognised these differences, being disclosed in the open-plan configurations. They too were 'doing education' differently, in the context of student-centred learning, while as at both schools, they came to recognise their teachers as different from their past teachers in traditional schools, a change they implicitly attributed to the influence on their teachers of working in shared space. The students at Brennan Heights College also came to act tactically, however, as the open space and deprivatised teaching practice brought poor teaching practice sharply into focus. Their tactic of placing pressure on administrators to change their teacher allocation, so they could work with teachers who had more effective teaching approaches, effectively subverted the rationalities of control and strategic implementation of curriculum planning and staffing allocation. Further subversion was highlighted by an example that emerged from John's (BHC) dialogue, when he explained the ways by which students were beginning to 'manipulate' their learning environments to meet their own objectives, such as sitting closer to other classes to hear their conversations, moving furniture to form personalised groups and engaging in digital contact with teachers outside of structured times.

Spatial intervention

The architects, Kurt and Ian, aimed at overcoming entrenched master-planning approaches that incorporated dispersed buildings across a site. In considering a school as a village or town, by having an entire school, its faculties, facilities and leisure spaces all under a single roof, they were able to rethink how a school might function. They focused on building a sense of community, contrary to most traditional school designs that are dispersed as segregated faculties with siloed subject-blocks and cellular classrooms. They wanted to shift the entire dynamic for relational inter-connectivity between staff, between students and between staff and students. In doing so they produced facilities that no longer looked like schools, that would lead to the negotiation of new ways of Being in space. Ian emphasised how important it was to engage in a design approach that drew out the pragmatics of connectivity. If there were good connections, people would use 'stuff' more, and spaces that facilitate and encourage collaborative teaching were likely to lead to improved student outcomes (Lackney, 2002). Ian deployed a metaphor—a symbolic form—for a space of connectivity. Every community should have a 'heart', a place to connect less formally through serendipitous, planned or unplanned meetings, "like a village of learning". This thinking aligns with de Certeau's 'wandering of the semantic', locales that have the

capacities for agility and fluidity, as earlier discussed in relation to the work of Dovey and Fisher.

This thinking led to the notion of open flexible spaces that would be occupied by learning communities of around 130 students, settled within the symbolic 'village'. It produced leverage for educational change by deliberately and contentiously engaging in a design discourse that would 'break down professional segregations'. In this respect, Ian's design was defining relations between power and space, at once affirming MOE policy, yet challenging normalised MOE perceptions of teaching practices. The MOE was effectively locating architecture as a political technology for deciphering and resolving new governance procedures for doing education, new spatial configurations that were also technologies of power (Foucault, 1988). These new discourses of power and technologies of power were met with practices of power, at once resistive and seemingly ad hoc.

Kurt, on the other hand, was more interested in the spatial programming of an ILE. He was emphatic that spatial design does not simply distribute spaces for things to happen. Rather design orchestrates practice, thus innovative design innovates practice. As Lefebvre argues: "the space thus produced serves as a tool of thought and of action," further noting: "in addition to being a means of production it is also a means of control, and hence of domination, of power" (1991, pg. 26). In Lefebvre's terms, the design of ILEs would be seen as able to transform how power is constituted as coercive spatialising force. Foucault (1980) recognised power differently, not as substance held or not held, but as non-substantive force that is exercised. This suggests that power is not primarily coercive or inhibiting but rather productive of our forms of knowing and our subjectivities. Where power is recognised as repressive there is resistance, making those exercises of power unproductive. In this sense, power is for the most part unrecognised and unknown, recognised and known primarily through its resistances. Innovations in school facilities design, as technologies of power are productive of new governmental agencies, or new agencies of educational conducts, the most significant of which are new modes of being-in-common or new forms of social intersection.

Social intersections

In traditional siloed and cellular models of school environments, teachers and students engaged an exercise of power that, in Foucault's terms, aimed at producing 'docile bodies,'

via disciplinary mechanisms. These mechanisms invoke social coherence through normalising procedures, such as the model of the 'free agent' in neoliberal societies. Dovey and Fisher (2014) too have touched on this. Discipline invokes juridical forms of control, as opposed to normalising procedures that work at the level of social coherence. What Foucault termed "the conduct of conducts," or the governmentality of institutional ordering, becomes a complex of governing procedures of discourses and locales whose tendency is towards norms (discursive rationalities), normativity (rational techniques or technologies), and normalisation (defining appropriate conduct) (Foucault, 1988, 2004). Giroux (1989) added that for decades teachers have sought comfort in discursive rationalities, the governing procedures of schooling and curriculum delivery, by engaging in practices that are rooted in narrow concerns for effectiveness, behavioural objectives, and principles of learning that treat knowledge as something to be consumed. The transition from traditional environments to ILEs has exposed teachers to vulnerability in transformational practice. Some could not make the transition, often leaving after experiencing considerable anxiety and feelings of failure.

Ryan (BHC) discussed how he gained more confidence as his teaching progressed and found the environment a good place to confidently talk about his views and concerns about teaching approaches. He considered the sharing of concerns on progressive teaching approaches and trial and error experiences to be empowering. He found strength in being part of a learning community, rather than being in an environment where discussion on innovation was discouraged or non-existent. He found that he was able to form very different, less formal, relationships with students, which he considered to be adding value in a student-centred learning approach. Ryan's practice, after two years of teaching in an ILE, was changing. Was this the result of programmed adjustment to physical space or reflection on what he was doing in an everyday sense, adapting, modifying and addressing his perspectives on the discourses and spatialities of his practice? Ryan was experiencing space as practiced before it was known, and he was developing an understanding of the production of space via his doing. He had, in an everyday sense, discovered an exercise of power productive of his relations or conduct of his conduct with students and colleagues in the less formal relationships that were developing. There is, in this sense, no absolute space (physical geometrical) of an empirical nature that would be mapped and known with objective certainty. Such empirical and objective projection is always already influenced and transformed by the multiple interactions constituting lived relations, what people do

physically, emotionally or cognitively, thus making the ILE a space socially produced and productive in social practices.

We all engage in the everyday, understand the production of space, and become aware of the spatialities of practice, but fail to theorise or thematically reflect on the space and spatiality of practices. Such engaging, understanding and becoming aware is lived rather than intellectualised practices are dynamic 'principles' of organisation, keyed to dominant social relations of production, as they embrace "production and reproduction, and the particular locations and spatial sets of characteristics of each social formation" (Lefebvre, 1991, pg. 33). The close proximity with which teachers must work in their everyday practices frequently strain professional relationships and expose frailties in pedagogic confidence. Teachers have found ILEs exciting, challenging, at times confronting, demanding, noisy and intimidating. Abilities to cope with peer criticism, with extraneous noise and with visual distraction were, therefore, according to John at BHC, critical qualities for teachers to possess. For Simon (PRHS), lowering his voice and moderating the amount of talking he did during a lesson was a way of maintaining social order when there are at least three other teachers in the same space.

From his experience of practice in traditional school environments and an ILE, John believed such skills were not at all encouraged in siloed classrooms within which teachers had their formative training, making the 'cultural capital' of teachers who had ILE capacities a limited pool for employment. Several teachers discussed the issue of constant interactions with students, admitting that in these schools you do not 'switch off'. Issues that teachers have never had to manage before, such as having no staff office for retreat, meant that teachers were always disclosed and disclosive within an everyday milieu of doing education. Ryan and Dianna adopted a form of emancipatory pedagogic practice that encouraged students to become self-managing learners: "[...] we do a lot of student-led learning for content knowledge ... [and] ... a lot less chalk and talk in favour of more interactive activities." They held this enabled teachers to provide personalised learning opportunities. This is a theme I want to develop further in Living While Doing Education, the third and final section to this discussion chapter.

LIVING WHILE DOING EDUCATION

> There is an assumption that teachers who teach in an innovative learning environment are 21st century educators. (Dianna, BHC)

This third section of my discussion chapter explicitly focuses on the idea that spatial ontology is significant when analysing and critiquing the emergence of ILEs. The very situatedness of those 'doing education', is for the most part overlooked, or un-theorised, even if attentive to their surrounding environment. I referred to this phenomenon in previous sections as 'the everyday'. By this I simply mean pre-structures, such as the ideological grounds of our environmental attentiveness, go unnoticed. While my research aims precisely at an ontological disclosure of such pre-structures, a defined or definitive 'list' of such pre-structures is impossible to provide, because they are locally situated, and contingent on contextual factors. When I use the term 'doing education', I don't simply mean a 'doing' that can be empirically described, measured, assessed and reported on, as if we are evaluating facilities, teacher effectiveness or learning outcomes. The 'doing' is the ontological daily 'becoming' of a teacher or learner, a process that is locally situated and that can be reflected on.

When critiquing the development of ILEs as either a coercive technology for educational change, or agency for improving teaching and learning, it pays then to recall that the 'automated' or un-reflected practices of living while doing education means that curriculum, teaching, learning and the place where these are situated, appear as undivided, yet dominate our daily practice. Thus, understanding that space is essentially practiced before it is known or made objective (Lefebvre, 1991), adds significant importance to understanding that our doing contributes to the social production of space. This section discusses three final sub-themes. The first concerns a question of interacting with space, demonstrating that self and space interact and emerge in the process of social production. The second addresses the everyday as the un-reflected reality of our doing. The everyday is an undisclosed horizon of doing. The final discussion asks whether ILEs constitute an exacerbation of the idealism back grounding their development, or if they provide a context for reflexive and ethical questioning.

Interacting with space

Teachers described default practices as constitutive of the normalising discourses of educational processes in traditional school settings, with their spatial representations dominated by the single cell. These previously un-reflected discourses are challenged by the move to ILEs, requiring participants to develop new 'meaning'. It is not a simple matter of saying, as Dianna (BHC) thought, "oh here I am...its gonna happen now because I have changed schools." The open spatial configurations of an ILE unintentionally authorises opportunities for practices that unhinge traditional practice, enabling stories of local and intimate happenings experienced by those engaged in teaching and learning. This collapsing of the 'historical dimensions' of experience (De Certeau 1984), requires teachers, students and community members to create a new historical imaginary around the symbolic significance of the new learning facility, making it real for themselves, their visions and practices.

'Doing education' in an ILE, and teachers' spatial experiences, led to emergent discourses concerning multiple issues prompted by spatial reconceptualisations: student-centred learning, altering time management structures associated with learning modules to facilitate extended time to focus on larger more in-depth projects, real life experiences, deeper learning experiences due to extended timetable structures, building collegial and professional relationships and communities, and entrepreneurialism—closer relationship with business and industry. Teachers spoke of a change of atmosphere, where traditional interpretations of teaching and learning had shifted from teacher-centric to student-centric relations, and where students themselves had begun to engage tactically. The school community began to engage in unconventional practices to achieve personalised outcomes and guide their learning pathways in a sense given by de Certeau (1984) to the notion of strolling: creating a 'stylistic figure' at odds with a functionalist norm.

Peoples' 'ways of operating' (De Certeau, 1984) are an observation on the many ways 'consumers' (users, occupants) might manipulate their context, Thus, users, such as students and teachers, may re-appropriate space, otherwise formally (or strategically) organised by techniques of socio-cultural production, and so both teachers and students in ILEs begin to trace out new narratives of spatial production. While the environment provides greater opportunity for students to be involved in their learning due to the open-plan integrated nature of classes, they are more inclined to question the logics of what they

are learning. As noted by Simon (PRHS), this may be attributed to pedagogy that inspires independent, student-led learning. Arguably, the novel spaces may too encourage students to become an empowered community.

In that context, as Denise (BHC) came to realise, students provide honest feedback, leading to discussion in which they become like critical colleagues rather than student learners. In her opinion, the open physical environment 'broke down' a teacher's personal space, enabling one's personal style in teaching and learning practices to blend. There are no real secrets or hidden agendas. Soon, an all-too-visible space is produced through the reality of the everyday, the transformational practices constituting 'doing education' in an ILE, creating, it seems, new normalising discourses of educational practices.

The reality of everyday practice

On analysis, the un-reflected everyday disappears, to be replaced by a seemingly infinite array of practices. Yet the everyday is our 'reality'. De Certeau contended that everyday practices like speaking, walking, reading, writing, travelling, dwelling and cooking are significant as they make consumers 'the unrecognised' producers, [poets] of their own 'wandering lines' and trajectories in "the jungle of functionalist rationality" (de Certeau, 1984, p. 18). In the poetics of such wanderings, teachers welcomed opportunities to tell their stories as experienced in everyday practices while making sense of their new environments. Spatial practices discover the hidden and silenced and while doing so, lead to re-emergence of marginalised vocabularies as participant stories (de Certeau, 1984).

Yet, this is not quite how the wanderings and mythic stories began. To begin with, staff at both schools struggled with the physical and visual connectedness of the open spaces, while close working proximity and professional relations either aggravated or inspired members of teaching teams. Mandy (PRHS) admitted that she had self-doubt about her ability to manage these kinds of situations, and was desperately holding back the temptation to think that there are teachers who just do not fit. Dianna (BHC) agreed that there had been some good 'operators' who tick the boxes for twenty-first century learning, but yet struggled with the 'open plan thing'. And then there were teachers whose resistance to making any commitment to adapting pedagogy and curriculum structure was absolute.

Space and pedagogy are intimately linked, though do not exist in a linear, simple relation, but in a rather complex and tense one as described above by Dianna and Mandy. At times,

'space' folds into creative pedagogies, while at other times, 'space' is absorbed into sites of conflict and resistance, when teachers 'rub up against each other', and where the exercise of power becomes all too visible. This, however, can be a productive tension (Foucault, 1981). Open learning environments create opportunities for open conversations, where 'privatisation' of practice is challenged. Teachers' everyday practices, as un-recognised spatial producers, create resistances that threaten the dominant order–within the spatial configuration of ILEs. These resistances push back against panoptic administration. Each teacher's trajectory, her personal 'stylistic figure' exceeds the limits of 'normal' educational practice.

Yet, to what extent are these transformations no more than an idealist governmentality of education? Mandated and required developments of ILEs, along with curriculum approaches that dissolve traditional approaches to teaching delivery and put in their place the freedom of students to inquire are, in de Certeau's terms, the top-down planning approaches of strategic designers, seemingly non-consultative with those whose simple role it is to teach. Hence in the preceding discussion, there seems to be such emphasis on teaching tactics of resistance. Casting back to the events of short-lived educational experimentation in the 1970s, is the ILE nothing more than an idealist distraction from the real business of reproduction of a viable workforce, the building of moral and responsible citizens, and achieving a liberal and equitable framework for society? The final discussion analyses the viewpoints of those interviewed on idealism and realism.

The distraction of idealism

With the MOE giving approval to architects to 'elevate' circumstances for a generation of innovative educational environments, architects produced spatial configurations that were substantially unfamiliar to educators moving from more traditional environments. This situation presented two concerns: Firstly, it highlighted the reformist intentions of the MOE for education, realised as ILEs, its importation of global policy developed by the OECD, and thus its normative 'benchmarking' of educational frameworks in terms of global and neo-liberal agendas. Secondly, the cases profiled in this study revealed teachers culturally unprepared for such environmental innovation, leading in some instances to anxiety and resistance. Questions have therefore been raised by participants in this research around the MOE's seemingly uncoordinated approach to the production of the ILE, driven perhaps by an idealist philosophy of education rather than a well-planned and structured approach

to change management to 21st century learning. In the last two sections of this chapter, I have referenced parts of the findings chapters that bring into view interpretations of participant experiences that relate to struggles and accomplishments evident in their everyday practices of trying to make an ILE 'work'. In this section I point to fundamental questioning of the reformist notion, not in order to quash the radical potentials within such reform but to question the agencies by which it has come about.

One of the biggest fears of the architects was expressed as a lack of confidence in educationists to understand the overall significance of new spatial configurations, designed to facilitate twenty-first century learning. Yet the architects did not necessarily take into consideration possibilities emerging from everyday education practices socially produced through the production of space. They too at times defaulted to a celestial eye of patterns or structures of connectivity they believed were transformative. The architects seemed to suggest that if the new facilities as mere physical containers of traditional educational practices, then a multiplicity of learning opportunities would be squandered. Lackney (2007) and Taylor (2002) already suggested this, where practice is ostensibly defined through the coercive powers of subject siloes and curriculum content. In contrast, this research offers a sustained perspective in considering a spatiality of practices derived from the everyday that defines the emergence of a social space and emancipatory pedagogic practice and is better aligned with the aspirations of twenty-first century learning.

Despite claims from some participants that the national curriculum is inclusive of multiple pedagogical opportunities, the majority of participants agreed that bureaucratic accountability demands limit pedagogic innovation and emancipatory pedagogic practices. This is supported in international research (Eisner, 2004; Giroux 1989; Pink, 2007; Taylor, 2002; Wagner, 2010). Giroux argued against schools being agents of social and cultural reproduction, believing that the problematic of traditional curriculum theory and schooling centres on questions about the most thorough, or most efficient ways to learn specific kinds of knowledge, to create moral consensus and provide modes of schooling that reproduce existing society. Both Kurt and Ian were adamant that reproducing what exists, in all senses of educational production, was not an option for the design of new schools as facilities and as programmes of learning. Their focus was in fact on developing or innovating new educational transformations.

By comparison with these architectural aspirations about new communities of practice, teachers said they struggled. They all commented how under-prepared they were for such radical spatial differences. 'Doing education' in these circumstances challenged their traditional understandings as teachers. Leadership approaches to this concern focused on more rigorous employment processes, such as looking at teachers' mindsets, the development of induction programmes to challenge existing understanding of pedagogy and engage in discourses about twenty-first century learning, as well as professional development that included understanding notions of 'deprivatisation', and 'conflict-resolution'.

The notion that 'space is practiced before it is known' (Lefebvre, 1991), was key to interpreting the interviews with architects, teachers and students. As occupancy progressed, six years at BHC, compared to the two years at PRHS, teachers felt like they were not making significant progress. There was a 'levelling off' of innovative teaching practice and, in some instances, retrenchment. At PRHS, teachers were learning about making spaces work for them through learning programme innovations and experimentation. Both schools were establishing conditions for 'doing education' by producing—inventing—spaces, by spatial practices. They were trying to reinvent, subvert and recontextualise physical and pedagogical space as a means of making sense of ILEs as agents of teaching and learning.

Through teacher challenges and resistances, there emerged innovative discourses of potential solutions from the tactics—experimentation and subverting of the strategic—of architects, teachers and students whose spatial practices were caught between representations of space and spatial representations—singularities of our everyday that reveal all manner of meanings. If school facilities may be said to be representative of a city map or habitable space, those diagrams of spatial dispersion say nothing about the multiple accounts of those users who take advantage of opportunities to make new spatial meanings. Resisting those normalising discourses of educational practices evident in timetable, pedagogy and curriculum subject positions—depictions of spatial relations—allows innovation to emerge as constitutive of discourses that emancipate rational organisation. This is evident in political normalising 'principles' of education, for example, what it means to recognise students' exercise of power, making them a centre of learning. The situatedness of everyday practices is constitutive of space. Space is produced from everyday practices. The ILE as 'physical representation' of space is not reducible to a rational organisation that accounts for the social production of space by means of fundamental

concepts of practice, power and the everyday. These fundamental concepts are more so the work of dreamers than of bureaucrats. But, even bureaucrats dream!

CHAPTER SEVEN

Agencies of Change

INTRODUCTION

> De Certeau asserts that space that is free from strategic order will produce new disciplines of power. (Harvey, 1995, p. 10)

This thesis set out to examine Innovative Learning Environments as agents of teaching and learning. To fully engage this topic it was necessary to develop four moments of analysis. The notion of agency that titles this chapter and the thesis more generally implies multiple agents with respect to learning facilities. Those agents clearly implicate teachers and students. But crucial for this study, key participants were the design architects and their design processes. This research also suggests a further agent, however. This is constituted in the spatiality and programmatics of the educational facilities themselves. Hence, the research set out to analyse architects' design processes for ILEs in meeting expectations of the Ministry of Education (MOE) to innovate school design. It also analysed teacher and student responses to ILEs as educational innovation. These two moments of analysis enabled further analysis of spatial design and teaching practices to bring into view congruence and lack of congruence in designing and inhabiting ILEs. A fourth moment engaged the agential frameworks of teaching and learning as dimensions of spatial ontology in the production and utilisation of ILEs. As De Certeau comments in the epigraphic citation above, we are always caught in a spatial disciplinary regime, even in contexts where spatial ordering seems to have undergone radical change. The thesis, in short, aimed to encounter such a spatial regime in contexts of two Auckland secondary school facilities.

The research established an empirical qualitative study of two recently completed ILEs in Auckland with participants including design architects for the ILEs, leading teachers and teaching staff and students from each of the ILEs. The study involved depth interviews with the participant groups in relation to key international literature in the field on the design of ILEs and MOE documents. The literature, methodology and findings chapters document these research processes. This led to a critical comparative analysis of findings from architects and school users as to expectations of innovative spatial practices and innovative teaching and learning practices, developed in the discussion chapter. As well, the notion of agency was critically addressed through the development of a spatial ontology as disclosive of the practices of space, developed differentially by architects, teaching staff and students. I suggested a series of factors that led to the need for this research. What initially alerted me to this project was the fact that ILEs, in the New Zealand context at the time I commenced this research, had almost no rigorous investigation as to their relevance for education innovation.

This was coupled with the MOE Property Division advocating the development of ILEs at a time when there was little New Zealand research on the development and implementation of ILE design and pedagogy to support its initiatives. The international research to that time had focussed on the physical properties of facilities, overlooking ILEs as agents of teaching and learning. There appeared, in this study, to be misalignments between architects' understandings and teacher experiences. This research therefore brought into perspective, in a comparative way, understandings expressed through the innovation of learning spaces by designers, and perspectives brought by those who inhabit those spaces. Furthermore, the research developed a spatial ontology in order to critically review and contextualise the spatial understandings of both the designers and users of ILEs featured in this study. This thesis, a qualitative empirical study, has engaged phenomenologically with spatial ontology, bringing into view a 'horizon' for understanding spatial configurations for teaching and learning. This 'horizon' is neither an empirical measure of spatial arrangements nor an observed objectivity of teaching practice, but what this study has managed is to reflect on possible successes and failures in the multi-faceted approaches to the processes underpinning facilities innovation.

This concluding chapter is developed in four segments. The first focuses on summarising the positive alignments as well as the misalignments discussed in the thesis, articulating the confrontations and co-operations that happened between the key agents. The second segment highlights what I consider to be the specific original contributions to knowledge offered by this thesis. The third section alerts us to the limitations to the research and its findings. All research has limits, and in the process of engaging over a number of years, I am now well aware of aspects of the design of the study I might now do differently. This leads to the fourth and final section, which opens the thesis to further research potential.

POWER, SPACE AND AGENCY

Under the critical themes of space, power and agency, I want to briefly outline from the findings and discussion chapters, what can be argued as positive alignments between architects' innovative design practices and the inhabitation of the resultant learning facilities by teachers and students. In this summary, I have developed six key issues. As will be remembered from the discussion chapter, both design architects emphasised that ILEs are predominantly social spaces wherein a complex of relations coexist. The ILE is a set of operations and thus cannot be reduced to the rank of a simple 'object'. My discussions of Lefebvre, De Certeau and Foucault all emphasise this point. Spatiality is more than manifestation of physical configurations. It implicates attunements, affective encounters, as much as function. Hence, one clear and successful alignment between design initiatives and

reception by teachers and students is what each architect emphasised as the 'heart' of the school. A coffee shop as heart of a school could be a place of learning encounter. A coffee shop becomes a place of identity, a place that encourages less formal interactions, through more affective spatial learning practices. This identity formation is power's exercise as spatial arrangement.

The discernment and attunements of a teacher in any particular kind of configuration potentially determines what can or cannot happen, but the nature of spatial configurations themselves have created the potential for teachers to challenge themselves or to shape their practices differently. Within the study, I recognised a situation whereby teachers in the two ILEs saw potentials for dynamic learning programmes, but also had to attend to the constraints of day-to-day content-driven agendas. I also saw, however, that these same teachers were prepared and felt confident to subvert their spatial practices as well as challenge expectations of traditional educational goals. Attunements, as affective learning practices, were equally discernible for the student cohorts, suggesting positive alignments with design aspirations and their implementations. Although there was limited data from the students, there was an overwhelming sense of their comfort, ease and satisfaction with the spatial innovations of their new environments. Students appeared to be more confident about socially producing their learning experiences than their teachers when making adjustments for variations in spatial configurations. They wanted to use their school as they used their city, their Internet and social media—that is, they were inclined to innovate spatial and technological practices to suit their aims. They felt comfort in knowing they did not have pre-established road maps to negotiate. Rather, they were always at home—or never at 'home'— knowing they could make their environments work for them.

This new affective shift for students had its rebounds on teachers and the proposition of teaching itself. Students noticed huge differences in teacher-student relationships. Teachers became more personal in their communications and interactions. The breakdown of traditional classrooms into open-plan flexible spaces meant students and teachers could collaborate, interact, support each other, and facilitate integrated learning approaches. Students used the spaces as they liked, subverting traditional forms of accountability. They could socially produce their spatial practices, overcoming a range of traditional frameworks of resistance to an educational exercise of power. Though, new tactics of resistance yet emerged. Hence, shifts in power relations across the educational infrastructure placed students more in control of their own learning, developing less formal relationships with

teachers, and breaking barriers between curriculum areas. This results for students in learning approaches that occur via engaged pathways—interests and passions—where content is not a prescribed goal.

While there are clearly positive alignments between design aspirations and resultant processes of learning, one of the key aims of this research is to delve into arenas where misalignments occur, not in order to challenge ILEs as a necessary and positive development in educational infrastructures, but to point to where the whole process of ILE commissioning, design and occupancy has not been sufficiently understood by the panoply of key agents involved in the process. From the findings and discussion, I am alerted to ten arenas where misalignments occurred in the study I undertook of two school designs. These misalignments fall into particular analytical relief when discussed through the frameworks of space, power and agency. The MOE, in initiating the development of ILEs, clearly recognised that educational facilities are themselves agents of teaching and learning, as crucial as the agencies of teachers themselves, along with curricula. In this recognition, the MOE also recognised the agency of design expertise in ILE design processes. Hence, in recognising the extent to which school environments influence student learning and teaching practice, the initiation of ILEs by the MOE engaged education in a new discourse, one that extended the conversation about what the Ministry needed to do differently to improve the performance of individual school environments and the overall state school property portfolio (MOE, 2011). A problematic symptom of this progressive initiative was the very understanding by the MOE, of 'space', in relation to the design of curriculum, pedagogy and learning theories. What can be recognised here in the ontology of space is a highly contested concept, having undisclosed horizons for research in the sociology of education, requiring further engagement in international literature on ILEs.

Abandonment of fixed school design typologies has transformed the ways in which the spatiality of physical environments and the spatiality of teaching and learning are implicated as agents. Limited understanding of those implications highlighted the lack of critical spatial approaches that ground educational planning. The Ministry aimed to be progressive, inventing new space-power configurations in resisting the cellular teaching model, encouraging cross-curricula and integrative approaches in transforming teaching, pedagogy and learning opportunities. Yet, the following misalignments ensued. As I emphasised when discussing the interview material from the architects, there seemed to be two processes of misalignment that led to confronting results. The initial one was dissatisfaction

on the part of the architects with the entire Ministry-led design process, absence of curriculum-expertise in the consultancy process, establishment boards ill equipped to the task of facilities innovation and the Ministry's complete emphasis on property consultancy. The other was a Ministry process that obviated or avoided the possibility for architects to encounter or engage with prospective teaching staff at the schools they were designing. While this was entirely procedural, inasmuch as staff are employed after the design process, this procedure or sequencing led to considerable misalignment of design aspiration and teacher implementation.

Coupled with this, the designers were perceived to be the drivers for curriculum innovation as well as spatial innovation. The architects were uncomfortable with this though found themselves in a curriculum consultancy vacuum. In this they were perceived to have an excessive exercise of power, resulting in teacher resistances. All the while, the architects actually bemoaned the fact that they felt restricted in how far they actually wanted to take spatial innovations. They recognised that facilities design is design-for-change, for ongoing programmatic innovation, and not for established and settled functions. Teaching staff, on the other hand, tended to come from environments that aimed to establish repetitive routines, even if flexibly practiced. Again, this opened spaces of resistance. In analysing the grounds for such resistances, it becomes clear that while it is not difficult to correlate spatiality and an exercise of power, and hence see how the architecture establishes regimes, it is less obvious to recognise teaching and learning *per se*, practices that implicate curricula and situated spatial practices as regimes of power. There is a tendency to not see curriculum practices as spatialising. Hence the problem field becomes split between spatial design articulations and teaching performance articulations, where in fact the two need to find common ground. This divide is fundamental to the Ministry's separation of property management and curriculum management. It is as if the two sides of the one field of engagement have no common point of engagement. As the architects emphasised, there was no consultancy opportunities with Ministry curriculum expertise.

There are further misalignments that bring into frame a much larger picture, or series of issues. A key one resides in teacher preparation for the transformative expectations in educational practices in ILEs, or preparation of teachers for inhabiting ILEs. There are few teacher education programmes that develop teacher skills in ongoing professional learning, and behavioural adaptations for ILEs. These include enhanced approaches to: teaching collaboration, curriculum integration, flexible space sharing, co-constructed learning, design

thinking, learning disruption, innovations in and management of spatial technologies and other ICTs. Perhaps, crucially, there is the need to cultivate affective dispositions to constant change. Contemporary teaching faces a situation of critical review. Is 'teaching' still relevant? If so, what is relevant, what can be adapted? Nowhere is this more pressing than in close critical appraisal of what now constitutes assessment practices, educational norms and prescribed learning goals.

The ILE is a disruption to more traditional norms, creating a paradigmatic shift in understandings of agency and an exercise of power made visible in the physicality of infrastructure and practiced via the programmable structures of bodies within that infrastructure. Thus, the architectural, in its distributions of spaces, determines what is encountered and operates within an expectation that those spaces are socially produced. Such encounters and social productions define the modalities of agency. Those of human agents—designers, teachers, students—and those of non-human agents—spatial configurations, technologies, curriculum documents. Traditional classroom walls exercised mechanisms of control where spatial segmentations ensured allocations of bodies and specified curriculum functions. With the introduction of radical spatial openness, there emerged discourses of unanticipated potentials, no longer governed by room-dividing border-posts. Such 'openness' developed whole new vectors of spatial control, via a set of dispersed performances that introduce flow, agility, and connectivity. Each learning-subject becomes an apparatus of the process of educational delivery.

Borderless environments and seamless integration of spaces overlay learning content or subject knowledge, enabling student-centric rather than teacher-centric relations. This is a radical departure from previously experienced teaching practices, and places significant pressure on teachers to manage and justify innovative approaches not only to themselves, but also to parents who are more familiar with traditional teaching and learning styles. Adding to those misalignments between spaces and teaching practices was an underlying concern for compliance with national curriculum and assessment protocols designed for previous regimes of spatial ontology. Practices of space require reflection on the everyday as precondition for advancing innovative educational encounters, such reflection collapsing cultural embeddedness or frameworks of resistance. This is well understood in De Certeau's differentiation of strategic and tactical practices of the everyday, as initially discussed in the literature review. Teachers were unfamiliar with activities that effectively asked for reflective practices, disclosing ontological structure that, in turn, reveal identity-

structures and understandings, or experiential awareness of the social production of space. Teachers found themselves significantly underprepared for appropriating ILEs. When inhabiting such spaces for the first time, teachers spoke of steep learning curves and internal challenges, where their pre-established dispositions triggered resistances or barriers to approaching their new situation. Although teachers have configured hybrid programmes of teaching and learning, the spaces they occupy remain unchallenged by innovative teaching and learning practices.

CONTRIBUTION TO KNOWLEDGE

The literature review brings together a range of researchers who engage with the physical processes of designing innovative educational facilities, along with researchers who develop perspectives on pedagogy and curricula for new learning models. Bringing these two fields into conversation is not in itself a genuine contribution to knowledge. What it does point to, however, is that I have effectively developed opportunities for analysing the frameworks of design and the frameworks of innovative teaching and learning in my empirical study of two case-study schools. This brings the contrastive discourses located in the literature review to 'life' and equally puts them in relief. Here I am able to effectively evaluate the extent to which designer, student and teacher agree or disagree on the same event-space of learning. To date, in a New Zealand context, this is the first study to address such a comparative engagement with spaces of learning. This defines an initial contribution to knowledge within the field of education.

I recognise that the research aimed for more than developing an empirical survey of designer and occupier of a new learning environment. It wanted to go deeper into the phenomenology of the key notions of space, power and agency and in doing so suggest how an ontological disclosure of spatiality is equally important for analysis, in defining what is in fact happening in new learning environments. Thus, not only was there an engagement with researchers into the design of learning spaces and those who research curriculum innovation, there was also a crucial address, via the theoretical understandings of space of the theorists Lefebvre, Foucault and De Certeau. I suggest that within New Zealand contexts, educational theory engaging the design of learning facilities has not sufficiently broached, let alone developed, issues of spatial ontology. I see this research as an initial step in that direction. Internationally, there is equally a perceived lack of engaging is questions of spatial ontology in the literature on innovative learning environments.

Together, these contributions provide an interpretive vantage point from which to see the ILE as an education phenomenon anew. This is neither an empirical measure of spatial configuration nor an observed objectivity of teaching practice. I am able to now outline briefly a series of ramifications stemming from what I see as these two 'arms' of my contribution to the field.

This research opens the potentials for a reordering of spatial codes defined in terms of space-power relations in ILEs. This means articulations of spatial configurations that are not only 'thinkable' or 'imagined' but also materially realised. In this is recognition that space is practiced before it is known—pointing to the crucial register of reflection on everydayness that was mentioned above. Agency, in the ways the notion is deployed here, is multiple and invokes, in design, both human and non-human agents. Equally, design is inherently spatial, whether design is of distributions of physical locales or distributions of learning curricula. The everyday is the starting-point for reflecting agency, not the specialised expert knowledge of 'architecture' or 'pedagogy'. The implications here are, in fact, far-reaching. What is called 'school', or 'student' or 'teacher' is an ongoing process and not a fixed category. A 'school' may or may not function as 'education', dependent on relationships between students, teachers, administrators, or landscapers, where material elements of emplacement compose 'school' as a space, and 'student' as a specific way of being–in or being emplaced, within specific moments. Hence, they are, at any time, spaces alive with potentials for social interpretation and use. This bears significantly on just how agency is considered. While definable as a school, the framing of its agency for teaching and learning is not determined, but multiplicitous, or unconditioned. This runs against the grain of the image of school (or designer, teacher or student) as conditioned or pre-determined. Between the unconditional and open ontological disclosure and a pre-determining condition, is the spacing of resistance that points to how a spatial exercise of power is distributed between locales and teaching programmes. De Certeau recognises this 'between' as that which separates the strategic and the tactical, or Foucault recognised as that which defines a power-knowledge nexus, and processes of resistance.

If we imagine a language that positions ILEs as planned sets of spaces that offer mulitplicitous experiences, that in themselves are socially produced through tactics, subversions of inhabitants, and where teachers begin to oppose strategic practices of control mechanisms ordinarily implied by traditional structures and power relations, that language will itself be an 'overwritten' ideolect and not an official discourse. This research aims at

recognising such an overwriting, complicating a notion that there is one way to achieve more appropriate design or learning outcomes. If there was an 'instrument' that supported a deeper understanding and collaborative approach to the spatial intention of the ILE apparatus by the authorities of invention, then a rigorous discourse based on the effects of space and power needs to be enumerated in its complexity and contradictions. As the designers have overtly indicated, ILEs are not designed as devices of control or repression. They are designed as enablers of freedom and opportunity, and as means of encouraging self-enforced control, a care for one's self through normalising procedures of educational governance. As De Certeau suggests, new disciplinary mechanisms accompany new regimes of power. The productive capacities of relations of power in ILEs demonstrate nuanced difference or a series of nuanced differences in how power is distributed across an ILE's multiple agents. Power is productive in an environment where collaboration and co-construction of learning is encountered. Power's exercise becomes 'visible' only with resistances (Foucault, 1980). Spaces of learning and spaces of teaching have been challenged as independent or even inter-dependent entities, opening a dialogue that places these acts much closer together, if not as a multiply singular entity.

LIMITATIONS

During the course of my research I recognised that engaging with a wider range of participants would have added depth to the research. There are three participant groups either missing or under-represented in the study. That they are 'missing' became increasingly evident during data analysis, rather than from initial thesis planning. I did seek participants from the Ministry of Education and on six different occasions tried to engage with people from the property management division. Due to the kind of data that was surfacing in the interviews with architects, I was increasingly aware that having an MOE response would have provided another perspective on the design, development and inhabiting of the ILE's. Due to the way Establishment Boards operate (only established to develop the school design, curriculum, and employ senior leaders, and disestablished as soon as the school is inhabited to enable a community led Board of Trustees take over), I was unable to make contact with members of the Establishment Boards of Trustees as they had already dispersed. As it transpires, it was the architects who reported on Ministry representatives and the EBoTs. This produced a one-sided perspective, without a means for seeking a counter- or balancing perspective.

As I have outlined in the findings and discussion chapters, I was confronted with a situation that emerged from the architects' interviews framing a contrast in perspectives relating to the design process that impacted relations between the designers, the EboTs and the Ministry property managers. At the point of realising the significance of this issue, and as described above, I made several attempts to assemble participants from the then disbanded Ministry Property Managers and EboTs to contribute to the research content. Requests to the Ministry for access to these participants were to no avail, on the grounds of confidentiality of the personnel involved, notwithstanding the ethics protocol of anonymity in the study write up. My engagement with student groups as focus groups under-represented the genuine range of potential responses. If I was to undertake this research again, I would focus more on delving into gaining student perspectives.

I am comfortable with the data I gathered from architects, leaders, teachers, and the students as their voices underpin the development of a critical discourse on the design and operations of ILEs. As I stated above, I am not as satisfied with the level of interaction I had with students. Their views were overwhelmingly positive, and took two perspectives. One related to the environment with regards to differing relations with teachers, and the other referenced their deeply embedded preparedness to socially produce the spaces they inhabited. They described feeling empowered to take further control of their own learning pathways. I am disappointed that I was not able to extend their conversations about this kind of spatial understanding as there could have been further analysis of their perspectives on the social production of space, and adapting a school and its surrounding community for purposes of learning. This offers opportunity for further research based on student experiences and perspectives.

There were a very limited number of schools designed as ILEs to access for research data when I initiated the research topic. From that limited stock, there were a number of schools that chose to refrain from becoming part of the study. I thus focused specifically on the two metropolitan high schools, fictitiously named Peek Road High School and Brennan Heights College. The limitation here is that I wanted schools that had similar year levels. One school was year 9-13 and the other was year 11-13, the difference being year 11-13 schools approach their first year of student intake in a very different manner. Year 11 introduces a national qualifications curriculum. Meeting the requirements of assessment conditions that lead to national accreditation requires schools to develop programmes of

learning that enable students to engage in focused study areas. This can influence teaching and learning approaches.

The New Zealand Ministry of Education has recently published a web site that was created to provide guidance for 'planning an innovative learning environment'. The content outlines six key strategies for facilities innovations: (i) understanding pedagogy as integral to innovative learning environments; (ii) using a collaborative process to develop an inclusive ILE; (iii) providing professional learning to support inclusive teaching practice before transitioning into the new space; (iv) designing and configuring flexible learning spaces to support the full participation and engagement of all students; (v) involving students in planning and preparing for the transition to a Flexible Learning Spaces (FLS); and (vi) involving parents and whānau in planning and preparing for the transition to an FLS. The Ministry website has developed resources using OECD studies and the work of John Hattie, and established the site as a guide to provide strategies and suggestions for developing ILEs that work for all learners. It focuses on supporting schools that are planning a new build or building modifications. Such recent and highly pertinent publications have been difficult to incorporate fully into this current thesis, though I recognise the value of these documents for future research into ILEs.

FUTURE RESEARCH

I have identified four potential arenas for future research, that develop from my PhD study:

(i) Further research into relations of the MOE to designers, teachers and students throughout the design process for an ILE. This would extend this current study to better engage both Ministry personnel and Boards of Trustees in the design process itself. The stated intent of the MOE to engage schools in new educational discourse requires a more coherent, collaborative and consistent engagement with both Curriculum and Property Divisions of the MOE. As has been emphasised in this study, there was no consistent engagement by these Divisions. Equally the architects in this study emphasised a lack of interaction with teachers or students who would be occupying their designs. A focus for further research would engage discourse about perceived misalignments or resistances between the Curriculum and Property Divisions to adequately interconnect with designers, EboTs, teachers and students.

(ii) Examination of the preparation of teachers for teaching in ILEs. It is clear that teacher training is key for preparing the change-cultures required for ILEs. Little address to date in New Zealand has been given either to the site of initial teacher education or on-going Professional Learning/Development/ (PLD) in relation to ILE. Hence, further research is needed into the preparation and ongoing PLD of teachers for understanding and implementing models of practice more suited to the spatial configuration potentials of ILEs. Teachers who were interviewed expressed concern with their preparedness for teaching in ILEs with regard to adequately understanding the implications of collaboration, integration of curriculum events, working in close proximity with other teachers, and noise. They specifically mentioned a lack of teacher education courses or adequate time to rethink their existing practices.

(iii) The thesis introduced into the discourses of ILEs the relevance of understandings of spatial ontology, highlighting phenomenological pre-structures to our experiential understandings of space as lived. Further research aims to explore the value of using such theories of spatial ontology to initiate innovative pedagogies. There is value in exploring theories of spatial ontology for underpinning pedagogies framed in environments where practices aligned with the social construction and production of space initiate innovative teaching approaches. The social production of space potentially triggers resistance or rewarding behaviours, leading to recognition of the importance of dispositions to problem solving, collaboration, adaptation, elasticity, flexible-space sharing, co-constructed learning and learning disruption. Such dispositions evolve from circumstances of the everyday. There is need to focus on transformative learning theory for engaging teachers in critical self-review that exposes intrapersonal functioning.

(iv) Lastly, detailed research into regimes of learning by students in ILE contexts, by exploring the ways students engage in the social production of space in school contexts, engaging physical configurations and visual technologies as learning moments for individually-encountered experiences. This enables research encounters that approach students as foci of learning, rather than as effective agents to a disciplinary framework expressed in notions of curriculum constraints. Researching learning from such perspectives brings further into view potential challenges to physical spaces and opens potential engagements with school designers.

With further research on ILEs, there is opportunity to look closely at 'words' and 'things', what in my literature chapter I suggested as the discursive and the non-discursive. Consideration needs to be given to developing a discourse that not only examines the visible (overt outcomes of teacher student interactions compliant with normalising procedures), but also makes visible the 'invisible' regarding understandings of spatialising enigmas constitutive of the complexities of relations between environments of teaching and learning. There is also the 'image' of what it means to be a learner prepared for her future. Here I reference the importance of ontological engagements. There is a danger of an overly simplifying empiricism in research evidence located specifically in technical compliance or teaching methodologies, assuming explicit givenness of an objectivity of spatial configuration and participant behaviours. By looking at the invisible, un-theorised, un-reflected daily encounters of 'doing education', my research has opened new horizons from which to view those encounters. In so doing, I hope my research will invoke further studies that challenge and advantage ILE initiatives, understand the needs of twenty-first century learners, create pathways for environmental designers and progressive learning initiatives and capitalise on ways evolving technological developments form seamless inter-relations between learning and environment.

As a final comment, I want to return briefly to the division of my discussion chapter, expressed as three broad encounters. The first of these encounters seems to dwell within a range of dissolutions or disconnections, a falling apart of things we perhaps associate with the work of analysis. Analysis pulls things apart to see how some things are composed. So, this research did aim to engage particularly with disconnections, or what I have termed in this concluding chapter, misalignments. Yet the discussion chapter turns, in a second part, to what it termed an emerging symbolic identity. This suggests a turn-around in research and the disposition of research to something like synthesis, the bringing of things together to emphasise how identity formations happen. Indeed, a genuine efficacy of these ILEs I studied was the forging of strong identities. Yet there was a third consideration in the discussion chapter, concerning neither analysis as dissolution nor synthesis as identity formation, but rather what I termed 'doing education' or, more correctly, living while doing education. Here I aimed to go beyond the analytics of things and words or the identity formations of things and words, and ask how one encounters education as existence, rather than as something known. I conclude this thesis with the reiteration of what I said there, or what I ended up saying there for this I think is my 'message':

Through teacher challenges and resistances, there emerged innovative discourses of potential solutions from the tactics—experimentation and subverting of the strategic—of architects, teachers and students whose spatial practices were caught between representations of space and spatial representations—singularities of our everyday that reveal all manner of meanings. If school facilities may be said to be representative of a city map or habitable space, those diagrams of spatial dispersion say nothing about the multiple accounts of those users who take advantage of opportunities to make new spatial meanings. Resisting those normalising discourses of educational practices evident in timetable, pedagogy and curriculum subject positions—depictions of spatial relations—allows innovation to emerge as constitutive of discourses that emancipate rational organisation. This is evident in political normalising 'principles' of education, for example, what it means to recognise students' exercise of power, making them a centre of learning. The situatedness of everyday practices is constitutive of space. Space is produced from everyday practices. The ILE as 'physical representation' of space is not reducible to a rational organisation that accounts for the social production of space by means of fundamental concepts of practice, power and the everyday. These fundamental concepts are more so the work of dreamers than of bureaucrats. But, even bureaucrats dream!

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Appendices:

Appendix 1: Interview questions for architects

(semi-structured interview …. the following are prompt questions)

How long have you been involved in the process of school design? Has this changed over time?

Can you describe your involvement in the design process? Who was responsible for making the critical decisions on the design concept?

Do you consider the right design team to be critical to the design process? Is the MOE critical in the design phases and how?

You are the conduit between education and built environment. Can you describe your feelings about being the potential change managers of teaching and learning?

How did you begin to make decisions about the spatial/conceptual design for educational purpose?

What criteria did the Ministry of Education provide to you that lead you to explore more radical school designs?

Can you describe if time or financial constraints impacted on the quality of the design for educational purpose?

Can you tell me about the design models you used to plan the school?

Can you describe changes you would make if you had the chance to redesign the school?

Can you describe the interactions you had with the new inhabitants of the school?

When you began to design the school, what was the main influencer when thinking about the way spaces should be designed?

Given that you have created spaces for teaching and learning to happen in, what is your view of good teaching and learning?

Can you describe your perspectives on how the spaces are successful for meeting the teaching and learning needs of the schools inhabitants now?

Can you describe your approach to post occupancy evaluation? Does this include success criteria for facilitating learning?

Appendix 2: Interview questions for senior leaders

(semi-structured interview …. the following are prompt questions)

How long have you been in school leadership positions?

What is it about this school that attracted you to apply for a job here?

Can you describe your feelings when you were appointed to the position, did you think this was going to mean something special for you as a teacher/leader?

At what stage of the process of creating the modern learning environment, were you employed? Did this make a difference to how you would have developed the school vision and philosophy?

This school is considered to be a modern learning environment. Have you heard of the term and what do you think it means?

Having lead this school for some time now, can you tell me about your thoughts of being a senior leader at a modern learning environment?

Do you think the environment has dictated your approach to the development of your vision, teaching philosophy and learning programmes? Do you think learning programmes are different or have to be different because of the modern learning environment? Do you think teaching has to be different?

As a senior leader responsible for leading professional development and learning programmes at the school, has this environment inspired you to do anything different? Can you describe the results of these changes/differences (if any)?

As a senior leader in a modern learning environment is there anything that has made the job of leading the school difficult?

Can you describe some of your most positive moments of being a senior leader at a modern learning environment?

Can you describe any comments from parents/community members about the design or of the school?

Can you describe any comments from parents/community members about the kind of learning offered at the school?

Do you feel as if you have had the right support/resources necessary for leading a modern learning environment e.g. access to adequately trained teachers, people with experience in managing more flexible learning programmes?

Appendix 3: Interview questions for teachers

(semi-structured interview …. the following are prompt questions)

Could you please to tell me about the different teaching experiences that you've had before coming to this school. (question for teachers who have been teaching over 3 years)

What is it about this school that attracted you to apply for a job here?

This school is considered to be a modern learning environment. Have you heard of the term and what do you think it means?

Has this environment inspired you to do anything different in your teaching?

How does this environment make you feel as a teacher?

Has teaching in this environment placed any extra pressure on you as a teacher? If so … in what way?

Do you think the environment makes a difference to the students …. have you noticed any difference in the students performance, attitude, enthusiasm, motivation?

If you have been a teacher or teacher trainee in a more traditional design school environment, how would you describe the differences?

If you got the chance to change the way you organise your teaching programme, would you do this and why?

I have heard people say modern learning environments are difficult to teach in because of the different kind of spatial design, what are your thoughts on this?

Can you describe any negative aspects of teaching in this modern learning environment?

Appendix 4: Interview questions for student focus groups

Focus Group: (approx. 45-60 minutes)

(semi-structured interview approach so the following questions are prompts for opening discussion amongst the focus group students)

Let's just go around the group and can you tell me about which school did you go to before this school, your year level, and what made you come to this school?

The Ministry of Education calls the design of this school a modern learning environment. What in your view makes this is a modern learning environment?

Do you like the design of this school .. the way the spaces are organised? What do you like about the design?

Do you think the design of the school enables you to work in a different way?

Do you think this school is good for learning? Why?

Do you think the teacher's feel/are different at this school?

In what way do you think the teachers are different?

What things are you doing at this school that you enjoy? why?

Is there any reason why you don't enjoy learning at this school? why?

Can you tell me if you have the opportunity to learn away from the school site when you need to gain knowledge about something you are doing that school can't provide?

Does the timetable give you flexibility, e.g. enable you to learn at different times?

Can you tell me about your opportunities to work independently (on your own)?

Can you tell me about your opportunities to work in groups (collaboratively)?

What kinds of skills do you think you are developing when learning at this school?

Can you tell me about a project that you are working on in class?

Appendix 5: Letter of introduction for proposed research to:
Principal & Board of trustees

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

To
My name is Alastair Wells and I am a PhD student at Auckland University of Technology. My area of expertise is in pedagogy, educational psychology, design, creativity, creative learning environments, technology and student learning. The focus of my PhD study is 'modern learning environments' as an agent of teaching and learning. I am particularly interested in the commissioning of the modern learning environment as a physical refocusing of secondary schools in response to the implementation of the revised New Zealand Curriculum 2007.

The New Zealand Curriculum (2007) is an initiative from the Ministry of Education to present a framework designed to ensure that all young New Zealanders are equipped with knowledge, competencies, and values they will need to be successful citizens in the twenty first century. In view of this, my study seeks to examine the impact modern learning environments have on teaching and learning. The architectural model of the modern learning environment sends an overt signal about inherent differences in 21st century learning displaying open, flexible and interactive spaces and offer opportunities for a variety of teaching and learning approaches. These changes reflect new learning and follow international trends that have radically redesigned spaces to offer opportunities for a wider variety of teaching and learning approaches than normally evident in secondary schooling. In particular I wish to focus on the ways the spatial design impacts on teachers' pedagogic practice and influences student learning in your school. I wish to include your school in this study, as it is a school that has been designed and built within the last five years and is representative of a modern learning environment.

I am formally approaching you the Principal and Board of Trustees of the school, to seek your agreement enabling me to conduct this research in your school. This means I will require access to some students and teachers to confirm their willingness to participate in this research project. I invite the Principal, and one other senior leader to contribute their perspectives by agreeing to be interviewed about their role in managing the modern learning environment.

An initial scoping contact aims at having teachers expressing an interest in participating and contributing to this research. It is important that you and all other participants understand that participation this project is voluntary, and without prejudice. Four teachers will be needed for interviews on an individual basis in four one-hour sessions at a time that is suitable for the school and the teacher, preferably all on the same day. I will make a financial contribution to the school equivalent to one-day relief pay, to enable you to employ a relief teacher.

With your approval, five students will be invited to join a focus. Students Under the age of sixteen will require parental consent, and all students who participate in the study will be required to provide their signed assent. Again, participation is voluntary, and without prejudice. The focus group will meet only once for 45-60 minutes.

As part of this process I would ask you as principal for your permission to hand out and collect Teacher Participant Information and Consent Forms, and Student Participant Information and Assent Forms (and Parental Consent Forms for those under the age of 16).

I intend to use digital audio-recording of interviews with you, teachers and student focus groups to collect data. Audio recordings may be transcribed by a transcriber who will have signed a confidentiality agreement.

As part of the process I would ask you as principal or your delegated authority to collect from parents/guardians, the Consent Forms, which authorise their child's participation in the project. Parents will have an opportunity to ask me for clarification and further information before signing and returning the consent form to you.

I invite you, the Principal and the Board of Trustees, to provide access to your school as the setting for this research project. Your acceptance of my request to enter your school is entirely voluntary. You may choose to withdraw permission for use of your school at any time. If the data gathered is reported/published this will be done in a way that complies with the codes of practice identified in the ethics approval of the Auckland University of Technology. I will take all measures to ensure that your anonymity will be maintained within the reports. All data including digital media will be stored in a secure location in the researcher's office in the School of Education kept for 6 years and then destroyed through a secure disposal service. You will be given a summary of the results of the study, and offered a copy of any publications that arise from this research project. If you have any queries or wish to know more about this research please contact me.

It is my intention to interview two senior leaders from your school and come into the school for one 1 hour visit per leader during the third term in 2014 with that visit organised at a time that is most suitable for you. I realise that you may feel wary about contributing to the research in fear of being identified within the education community for contributing your perspectives, but I will ensure your contribution remains confidential by keeping all data gathered in a secure location and ensuring your anonymity when reporting your comments within the content of my thesis and any research reports, academic articles and conference presentations I make from the thesis. I will check verbally before the interview to see whether you are still willing to take part. I wish to interview you and one other senior leader and document information about your thoughts and perspectives related to leading and managing a modern learning environment, your schools vision and philosophy underpinning your learning programme design and your opinion on the way the environment makes a difference to teaching and learning in the school.

If you do decide to participate in this research and change your mind you can withdraw from the project at any time. You have the right to withdraw at any stage prior to the completion of data collection 15/12/2014. Data already gathered will be destroyed and not reported or published in any form.

All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted. The audio recorders are kept in the office of the Project Supervisor at the School of Education, Auckland University of Technology, office AR213. The consent forms will be stored in a locked cabinet in this office for 6 years. After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

You will be provided with a summary of the findings at the end of the project and you have the opportunity to obtain copies of any journal articles or conferences paper arising from the research. If you have any queries or wish to know more about this research please contact me.
Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, leon.w.benade@aut.ac.nz, 09 921 9999 ext. 7931. Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz , 921 9999 ext 6038.

Thank you for your time to consider this proposal

Yours sincerely

Alastair Wells

Alastair Wells
PhD student
School of Education
Faculty of Culture & Society
Auckland University of Technology.
Phone 021 211 2572
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For enquiries concerning the project please contact:
Dr Leon Benade,
School of Education
Faculty of Culture & Society
Auckland University of Technology.
Phone 09 921 9999 ext. 7931
Email: lbenade@aut.ac.nz

For any queries regarding ethical concerns please contact:
The Executive Secretary
Kate O'Connor, AUTEC,
ethics@aut.ac.nz
Ph: 921 9999 ext 6038.

APPROVED BY AUTEC, AUCKLAND UNIVERSITY OF TECHNOLOGY ETHICS COMMITTEE on 11 September 2014 for a period of 3 years to 11 September 2017. Reference: 14/245

Appendix 6: **Teacher Participant Information Sheet**

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells

Date:

To

My name is Alastair Wells and I am a PhD student at Auckland University of Technology. My area of expertise is in design, creative learning environments, pedagogy, educational psychology, technology and student learning. I am particularly interested in the development of the 'modern learning environments' as a physical refocusing of secondary schools in response to the implementation of the revised New Zealand Curriculum 2007. The curriculum is an initiative of the Ministry of Education to present a framework designed to ensure that all young New Zealanders are equipped with knowledge, competencies, and values they will need to be successful citizens in the twenty first century.

The 'modern learning environment' is a significant shift from traditionally designed secondary schools and students attending a school like this have the opportunity to learn in very different ways. In view of this shift, I wish to come to your school and investigate the nature of teaching and learning in the modern learning environment. I would like to interview you as a teacher/mentor/learning facilitator of students in this environment and record your personal narrative of experiences. I would like to ask you questions about your programme, pedagogy (teaching approaches), record your perspectives on being part of such a new learning environment.

An important function of the modern learning environment is to provide interactive, connected spaces that facilitate interactive learning opportunities, enabling students to take more ownership of their learning pathways and become confident connected 21st century learners. In view of this, I would like to talk with you about your place in this environment and obtain your perspectives on how the design of the environment 'works' for your teaching approaches. Gaining an understanding of any changes you have made to your previous practice due to being in a modern learning environment provides important feedback to potential employees for these environments and adds to the literature about 21st century teaching practices. It is my intention to interview you during term three or four of 2014.

It is my intention to interview four teachers from your school and come into the school for one 1 hour visit per teacher during the third term in 2014 with that visit organised at a time that is most suitable for you and the school. I realise that you may feel wary about contributing to the research in fear of being identified within the education community for contributing your perspectives, but I will ensure your contribution remains confidential by keeping all data gathered in a secure location and ensuring your anonymity when reporting your comments within the content of my thesis and any research reports, academic articles and conference presentations I make from the thesis.

Your role in this research would be to allow me to interview you and record your thoughts and perspectives on the impact modern learning environment spaces have had on your teaching practices and reflect on how you manage learning in these spaces (e.g. programme planning and teaching approaches) at your school. I will check verbally before each interview to see whether you are still willing to take part. Recording will be done using audio taping/digital media.

Audiotape transcription may be done by a transcriber who would be required to sign a confidentiality agreement. You will be given a transcribed document of the interview to check for accuracy.

I invite you to be part of this research, but your participation is entirely voluntary. If you do decide to participate in this research and change your mind you can withdraw from the project at any time. You have the right to withdraw at any stage prior to the completion of data collection 15/12/2014. Data already gathered will be destroyed and not reported or published in any form.

All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted. The audio recorders are kept in the office of the Project Supervisor at the School of Education, Auckland University of Technology, office AR213. The consent forms will be stored in a locked cabinet in this office for 6 years. After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

Your employer has confirmed that participation or non-participation in this project will not affect your employment status. You will be provided with a summary of the findings at the end of the project and you have the opportunity to obtain copies of any journal articles or conferences paper arising from the research. If you have any queries or wish to know more about this research please contact me.

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, lbenade@aut.ac.nz, 09 921 9999 ext. 7931.
Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz 921 9999 ext 6038.

If you are satisfied that all your queries have been answered and agree to be a participant, please fill out the attached consent form and return it to me.

Thank you for your time

Yours sincerely

Alastair Wells

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For any queries regarding ethical concerns please contact:

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Kate O'Connor, AUTEC,
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Appendix 7: Teacher Consent Form

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

I have read the Participant Information Sheet (Teacher) and have been given the opportunity to ask any questions and have them answered.

I understand that:

- My participation in this research is entirely voluntary.
- Participation or non-participation in this project will not affect my employment status.
- I have the right to withdraw from this research at any time.
- I understand my comments will be recorded digitally during the interview and the data will be transcribed. Digital voice recording transcription may be done by a transcriber who would be required to sign a confidentiality agreement.
- I have the right to withdraw at any stage until the completion of the data collection 15/12/2014. Data already gathered will be destroyed and not reported or published in any form.
- I have been assured that I will not be identified in research reports, academic articles and conference presentations.
- All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted.
- Consent forms will be stored in a locked filing cabinet in the School of Education, Auckland University of Technology, office AR213.
- After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

I give my informed consent to be a participant in the research investigating Modern learning environments as an agent of teaching and learning. A research study based on the way learning environments impact teaching and learning in secondary schools.

I wish to be informed of any presentations and research report summaries available: Yes No

NAME: ……

SIGNED: …… DATED:……

Contact details, email: Ph:

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Appendix 7a:

Touch the Future

As a teacher are you interested in talking about your teaching & learning experiences?

Modern Learning Environments as an Agent of Teaching and Learning

My name is Alastair Wells and I am a PhD student at Auckland University of Technology. I have been given permission by your principal to undertake some research in your school

Your school is considered a modern learning environment and I wish to interview people who work and learn in this school. To get a good cross section of opinions and perspectives, I will be interviewing students, teachers and school leaders.

This flyer is to ask you 'as a teacher in a modern learning environment' if you would like to be interviewed to talk about your experience at this school.

I intend to interview four teachers, 3 x teachers (who have been teaching over 3 years) from different learning areas, 1 x recently graduated teacher, so if you are interested in contributing to this research with your comments about teaching and learning in this school, please indicate below. Each interview will be between 45-60 minutes at a time suitable with you the teacher and the school.

If you offer to participate and be interviewed please indicate in the tick box below and provide details in the space provided. There will be a participant information sheet and consent form provided once the list of participants has been created. During each interview session there will be coffee, tea or water and biscuits provided. Once you have filled in the information please scan and email to Alastair at the email address below. If you have any further questions about participating in the research, please don't hesitate to contact me.

I wish to participate ☐ Name: .....

Contact details, email: Ph:

How long have you been teaching: Learning area/s strength:

Alastair Wells
School of Education
PhD student
Faculty of Culture & Society
Auckland University of Technology.
Phone 021 211 2572
Email: imagin8iv@gmail.com

APPROVED BY AUTEC, AUCKLAND UNIVERSITY OF TECHNOLOGY ETHICS COMMITTEE on 11 September 2014 for a period of 3 years to 11 September 2017. Reference: 14/245

Appendix 8: Principal & Senior Leader Participant Information Sheet

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

To

My name is Alastair Wells and I am a PhD student at Auckland University of Technology. My area of expertise is in pedagogy, educational psychology, design, creativity, creative learning environments, technology and student learning. The focus of my PhD study is 'modern learning environments' as an agent of teaching and learning. I am particularly interested in the commissioning of the modern learning environment as a physical refocusing of secondary schools in response to the implementation of the revised New Zealand Curriculum 2007.

The New Zealand Curriculum (2007) is an initiative from the Ministry of Education to present a framework designed to ensure that all young New Zealanders are equipped with knowledge, competencies, and values they will need to be successful citizens in the twenty first century. In view of this, my study seeks to examine the impact modern learning environments have on teaching and learning. The architectural model of the modern learning environment sends an overt signal about inherent differences in 21st century learning displaying open, flexible and interactive spaces and offer opportunities for a variety of teaching and learning approaches. These changes reflect new learning and follow international trends that have radically redesigned spaces to offer opportunities for a wider variety of teaching and learning approaches than normally evident in secondary schooling. In particular I wish to focus on the ways the spatial design impacts on teachers' pedagogic practice and influences student learning in your school. I wish to include your school in this study, as it is a school that has been designed and built within the last five years and is representative of a modern learning environment.

I am formally approaching you as the Principal of the school, to seek your agreement enabling me to conduct this research in your school. This means I will require access to some students and teachers to confirm their willingness to participate in this research project. I invite you, as Principal, and one other senior leader to contribute your perspectives by agreeing to be interviewed about your role in managing the modern learning environment.

An initial scoping contact aims at having teachers expressing an interest in participating and contributing to this research. It is important that you and all other participants understand that participation this project is voluntary, and without prejudice. Four teachers will be needed for interviews on an individual basis in four one-hour sessions at a time that is suitable for the school and the teacher, preferably all on the same day. I will make a financial contribution to the school equivalent to one-day relief pay, to enable you to employ a relief teacher.

With your approval, five students will be invited to join a focus. Students Under the age of sixteen will require parental consent, and all students who participate in the study will be required to provide their signed assent. Again, participation is voluntary, and without prejudice. The focus group will meet only once for 45-60 minutes.

As part of this process I would ask you as principal for your permission to hand out and collect Teacher Participant Information and Consent Forms, and Student Participant Information and Assent Forms (and Parental Consent Forms for those under the age of 16).

I intend to use digital audio-recording of interviews with you, teachers and student focus groups to collect data. Audio recordings may be transcribed by a transcriber who will have signed a confidentiality agreement.

As part of the process I would ask you as principal or your delegated authority to collect from parents/guardians, the Consent Forms, which authorise their child's participation in the project. Parents will have an opportunity to ask me for clarification and further information before signing and returning the consent form to you.

I invite you to provide access to your school as the setting for this research project. Your acceptance of my request to enter your school is entirely voluntary. You may choose to withdraw permission for use of your school at any time. If the data gathered is reported/published this will be done in a way that complies with the codes of practice identified in the ethics approval of the Auckland University of Technology. I will take all measures to ensure that your anonymity will be maintained within the reports. All data including digital media will be stored in a secure location in the researcher's office in the School of Education kept for 6 years and then destroyed through a secure disposal service. You will be given a summary of the results of the study, and offered a copy of any publications that arise from this research project. If you have any queries or wish to know more about this research please contact me.

Also I wish to ask you if you to be part of this research because you are a leader of a modern learning environment. It is my intention to interview two senior leaders from your school and come into the school for one 1 hour visit per leader during the third term in 2014 with that visit organised at a time that is most suitable for you. I realise that you may feel wary about contributing to the research in fear of being identified within the education community for contributing your perspectives, but I will ensure your contribution remains confidential by keeping all data gathered in a secure location and ensuring your anonymity when reporting your comments within the content of my thesis and any research reports, academic articles and conference presentations I make from the thesis. I will check verbally before the interview to see whether you are still willing to take part. I wish to interview you and one other senior leader and document information about your thoughts and perspectives related to leading and managing a modern learning environment, your schools vision and philosophy underpinning your learning programme design and your opinion on the way the environment makes a difference to teaching and learning in the school.

If you do decide to participate in this research and change your mind you can withdraw from the project at any time. You have the right to withdraw at any stage prior to the completion of data collection 15/12/2014. Data already gathered will be destroyed and not reported or published in any form.

All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted. The audio recorders are kept in the office of the Project Supervisor at the School of Education, Auckland University of Technology, office AR213. The consent forms will be stored in a locked cabinet in this office for 6 years. After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

You will be provided with a summary of the findings at the end of the project and you have the opportunity to obtain copies of any journal articles or conferences paper arising from the research. If you have any queries or wish to know more about this research please contact me.
Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, leon.w.benade@aut.ac.nz, 09 921 9999 ext. 7931.
Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz , 921 9999 ext 6038.

Thank you for your time to consider this proposal

Yours sincerely

Alastair Wells

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APPROVED BY AUTEC, AUCKLAND UNIVERSITY OF TECHNOLOGY ETHICS COMMITTEE on 11 September 2014 for a period of 3 years to 11 September 2017. Reference: 14/245

Appendix 9: **Principal/Senior Leader Consent Form**

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:
To

I have read the Participant Information Sheet (Principal/Senior Leader) and have been given the opportunity to ask any questions and have them answered.

I understand that:

- My participation in this research is entirely voluntary
- I have agreed to the researcher approaching teachers in my school to participate in this research project and that participation or non-participation by teachers in this project is without prejudice.
- I have given an assurance that a student's participation or non—participation will not affect the relationship of the parent and child with the school.
- My interview will be audiotaped and the data transcribed.
- I have been assured that I will not be identified in research reports, academic articles and conference presentations.
- I have agreed to participate in this research as a school leader
- I have the right to withdraw from this research at any stage prior to the completion of the data collection 15/12/2014. Data already gathered will be destroyed and not reported or published in any form.
- All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted.
- Consent forms will be stored in a locked filing cabinet in the School of Education, Auckland University of Technology, office AR213.
- After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

I give my informed consent for my school to be the setting for research about Modern learning environments as an agent of teaching and learning. I also give my consent to be interviewed as a school leader participant.

I wish to be informed of any presentations and research report summaries available: Yes No

NAME: ……
SIGNED: ……
DATED:……

APPROVED BY AUTEC, AUCKLAND UNIVERSITY OF TECHNOLOGY ETHICS COMMITTEE on 11 September 2014 for a period of 3 years to 11 September 2017. Reference: 14/245

Appendix 10: Architect Participant Information Sheet

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells

Date:

To

My name is Alastair Wells and I am a PhD student at Auckland University of Technology. My area of expertise is in design, creative learning environments, pedagogy, educational psychology, technology and student learning. I am particularly interested in the development of the 'modern learning environments' as a physical refocusing of secondary schools in response to the implementation of the revised New Zealand Curriculum 2007. The curriculum is an initiative of the Ministry of Education to present a framework designed to ensure that all young New Zealanders are equipped with knowledge, competencies, and values they will need to be successful citizens in the twenty first century.

The 'modern learning environment' represents a significant shift from traditionally designed secondary schools, and students attending a school like this have the opportunity to learn in very different ways. In view of this shift, and that your firm was commissioned to design this environment I would like to interview you about the design of this new school. I would like to ask you questions about your process, interactions with educational stakeholders, design criteria, reasons for designing the school the way you have and your perspectives on being a designer involved with the development of this modern learning environment.

Gaining an understanding of your practice associated with designing this secondary school will add to the international literature on school design and provide an insight for education professionals and other environmental design firms when they engage in the practice of developing 21st century secondary schools. Education professionals are showing a keen interest in the philosophy and theories of learning designed into the spatial layout. There is an international interest in this topic, and having reviewed the literature, writers agree that there is a need for more empirical research to support further discussions about the design and commissioning of 21st century learning environments. The emphasis of this research is to obtain both designers' perspectives on the design process and capture the perspectives of the people who have to work in this environment as educational providers and users.

As part of the research, I have chosen two modern learning environments designed and built in the last five years, each from different design firms. The architectural model of the modern learning environment sends an overt signal about inherent differences in 21st century learning displaying open, flexible and interactive spaces offer opportunities for a variety of teaching and learning approaches. These changes reflect new learning and follow international trends that have radically redesigned spaces to offer opportunities for a wider variety of teaching and learning approaches than normally evident in secondary schooling.

I realise that you may feel wary about contributing to the research in fear of being identified within the education and architectural design community for contributing your perspectives, but I will ensure your contribution remains confidential by keeping all data gathered in a secure location and ensuring your anonymity when reporting your comments within the content of my thesis and any research reports, academic articles and conference presentations I make from the thesis. Documentation would be done using audio taping/digital media. Audiotape transcription may be

done by a transcriber who would be required to sign a confidentiality agreement. You will be given a transcribed document of the interview to check for accuracy.

I invite you to be part of this research, but your participation is entirely voluntary. If you do decide to participate in this research and change your mind you can withdraw from the project at any time. You have the right to withdraw at any stage prior to the completion of the data collection 15/12/2014. Data already gathered will be destroyed and not reported or published in any form. All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted. The audio recorders are kept in the office of the Project Supervisor at the School of Education, Auckland University of Technology, office AR213. The consent forms will be stored in a locked cabinet in this office for 6 years. After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213

You will be provided with a summary of the findings at the end of the project and you have the opportunity to obtain copies of any journal articles or conferences papers arising from the research. If you have any queries or wish to know more about this research please contact me.

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, leon.w.benade@aut.ac.nz, 09 921 9999 ext. 7931. Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, *ethics@aut.ac.nz* , 921 9999 ext 6038.

If you are satisfied that all your queries have been answered and agree to be a participant, please fill out the attached consent form and return it to me.

Thank you for your time

Yours sincerely

Alastair Wells

Alastair Wells
PhD student
School of Education
Faculty of Culture & Society
Auckland University of Technology.
Phone 021 211 2572
Email: imagin8iv@gmail.com

For enquiries concerning the project please contact:
Dr Leon Benade,
School of Education
Faculty of Culture & Society
Auckland University of Technology.
Phone 09 921 9999 ext. 7931
Email: lbenade@aut.ac.nz

For any queries regarding ethical concerns please contact:

The Executive Secretary
Kate O'Connor, AUTEC,

ethics@aut.ac.nz
Ph: 921 9999 ext 6038.

APPROVED BY AUTEC, AUCKLAND UNIVERSITY OF TECHNOLOGY ETHICS COMMITTEE on 11 September 2014 for a period of 3 years to 11 September 2017. Reference: 14/245

Appendix 11: Architect/designer planner Consent Form

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells

Date:

I have read the Participant Information Sheet and have been given the opportunity to ask any questions and have them answered.

I understand that:

- My participation in this research is entirely voluntary.
- I have the right to withdraw from this research at any stage prior to the completion of the data collection 15/12/2014
- The interview will be digitally recorded and the data transcribed.
- I have the right to withdraw any data gathered up until 15/12/2014. Data already gathered will be destroyed and not reported or published in any form.
- I have been assured that I will not be identified in research reports, academic articles and conference presentations.
- All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted.
- Consent forms will be stored in a locked filing cabinet in the School of Education, Auckland University of Technology, office AR213.
- After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

I give my informed consent to be a participant in the research investigating Modern learning environments as an agent of teaching and learning. A research study based on the way learning environments impact teaching and learning in secondary schools.

I wish to be informed of any presentations and research report summaries available: Yes No

NAME: ……

SIGNED: …… DATED:……

Contact details, email: Ph:

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Appendix 12: Student Participant Information Sheet

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

To

My name is Alastair Wells and I am a PhD student at Auckland University of Technology. I have been working in schools and universities as a teacher, lecturer and school principal and now undertaking research to complete my doctorate in education especially looking at how well modern learning environments (new schools with large open and flexible classrooms) are working for teaching and learning.

I am interested in finding out how students feel in a modern learning environment. I would like to interview you about your ways of learning in this school. I am very interested in the way you use the new spaces and would like you to talk about how the learning spaces make a difference to the way you work.

If you agree, I will come to your school and include you in a focus group (a group of about five students). We will gather in a meeting space to talk about your learning experiences at your school. Your name will not be used in my reports. I will record our discussion on a voice recorder, which may be converted into a text document by a transcriber (a typist). What you tell me will contribute to my research project and will be useful to other people in universities, the Ministry of Education, and architects who are responsible for designing and managing your school.

I will not be using anyone's name in my research, so you should not be concerned about being identified. It is important, though that you do not talk about what you and the other students discuss in the focus group. I will check before we begin the focus group to make sure you are still willing to take part.

Your participation is entirely voluntary. This means that you may choose to say no if you have changed your mind about participating. During the focus group, you can pull out if you want to at any time. Even if you take part in the whole focus group discussion, you will still be able to have your voice recording erased, as long as you let me know before the completion of the data collection 15/12/2014.

I am prepared to answer any questions you have about this research and especially your participation in the focus group. Questions can be asked through teachers or the principal of the school or directly to me at the contact details below.

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, lbenade@aut.ac.nz, 09 921 9999 ext. 7931. Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz 921 9999 ext 6038.

Thank you for your time

Yours sincerely

Alastair Wells

Alastair Wells
PhD student
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Auckland University of Technology.
Phone 021 211 2572
Email: imagin8iv@gmail.com

For enquiries concerning the project please contact:
Dr Leon Benade,
School of Education
Faculty of Culture & Society
Auckland University of Technology.
Phone 09 921 9999 ext. 7931
Email: lbenade@aut.ac.nz

For any queries regarding ethical concerns please contact:

The Executive Secretary
Kate O'Connor, AUTEC,
ethics@aut.ac.nz
Ph: 921 9999 ext 6038.

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Appendix 13: Student Assent Form

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

I have read the Participant Information Sheet (student) and have been given the opportunity to ask any questions and have them answered.

I understand that:

- My participation is entirely voluntary.
- I will be part of a focus group to answer questions and talk about my learning experiences at this school.
- The Principal of the school has given permission for the researcher to be in the school.
- I can say that I no longer wish to participate if I decide not to.
- I understand that the focus group will happen at a time suitable for the school.
- I understand a digital voice recording will be made during the focus group session
- My answers to the questions will be used in a University research project.
- My name will not be used in any research reports, academic articles or conference presentations.
- All my information will be kept in a safe place at AUT and not be given to anyone else.
- Even if I agree to be part of the research to start with, but change my mind, I would no longer have to be part of the research project.

I give my informed assent to be a participant in the research investigating Modern learning environments as an agent of teaching and learning. This research is a PhD project that looks at the design of new schools and examines the way in which these schools are working for teaching and learning.

I wish to be informed of any presentations and research report summaries available: Yes No

NAME: ……

SIGNED: …… DATED:……

Contact details, email: Ph:

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Appendix 14: Transcriber Confidentiality Agreement

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells

Date:

To

I understand that all the material I will be asked to transcribe is confidential. I understand that the contents of the tapes can only be discussed with the researchers. I will not keep any copies of the transcripts nor allow third parties access to them while the work is in progress.

Transcriber signature:.....

Transcriber name: .....

Transcriber Contact Details: .....

.....

.....

Date: .....

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Appendix 15: Parent/Guardian Participant Information Sheet

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

To

My name is Alastair Wells and I am a PhD student at Auckland University of Technology. I have been working in schools and universities as a teacher, lecturer and school principal and now undertaking research to complete my doctorate in education especially looking at how well modern learning environments (new schools) are working for teaching and learning.

I would like to interview your daughter/son in a focus group. I am keen to speak to some students about their experiences of learning in a school that uses large, open plan learning spaces and how these learning spaces make a difference to the way they learn.

If you agree, your child will be in a group of 5 students who will gather in a meeting space at school. I will be using a digital recorder to capture their views of learning at this school as compared to any previous experiences they have had of learning in other schools. Audio recordings may be transcribed by a transcriber who will have signed a confidentiality agreement. I will be the only researcher/interviewer present in the focus group meeting.

The Principal has given an assurance that participation or non-participation in this project will not affect the relationships of you and your child with the school. Your child's participation is entirely voluntary. You may choose to withdraw your child from the project at any time prior to the completion of data collection 15/12/2014. The identity of your child will not be made known at any time in my reporting of the research. Your child has an information sheet, and will have to sign an Assent Form if you agree to your child's participation in the focus group. I will ensure your child's contribution remains confidential by keeping all data gathered in a secure location and ensuring your anonymity when reporting their comments within the content of my thesis and any research reports, academic articles and conference presentations I make from the thesis.

I am aware that students of this age may not have the confidence to request that the audiotape be turned off. I will be looking for indications that students are uncomfortable with the process and I am confident that my experience as a qualified teacher educator/researcher will enable me to identify when this is occurring. All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted. The audio recorders are kept in the office of the Project Supervisor at the School of Education, Auckland University of Technology, office AR213. The consent forms will be stored in a locked cabinet in this office for 6 years. After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213. If you have any queries or wish to know more about this research please contact me.

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, lbenade@aut.ac.nz, 09 921 9999 ext. 7931.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz 921 9999 ext 6038.

If you are satisfied that all your queries have been answered and agree for your daughter/son to be a participant, please fill out the attached consent form and return it to the school.

Thank you for your time

Yours sincerely

Alastair Wells

Alastair Wells
PhD student
School of Education
Faculty of Culture & Society
Auckland University of Technology.
Phone 021 211 2572
Email: imagin8iv@gmail.com

For enquiries concerning the project please contact:
Dr Leon Benade,
School of Education
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For any queries regarding ethical concerns please contact:

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Appendix 16: Parent/Guardian Consent Form

Title:
Modern learning environments as an agent of teaching and learning

Researcher: Alastair Wells
Date:

I have read the Participant Information Sheet (Parent/Guardian) and have been given the opportunity to ask any questions and have them answered.

I understand that:

- My child's participation in this research is entirely voluntary.
- The Principal has given an assurance that participation or non-participation in this project will not affect the relationships of me and my child with the school.
- I have the right to withdraw my child from this research at any stage prior to the completion of the data collection 15/12/2014. . Data already gathered will be destroyed and not reported or published in any form.
- I have been assured that my child will not be identified in research reports, academic articles and conference presentations.
- My child will be audiotaped during the focus group and the data transcribed.
- My child may request that the recording be stopped.
- All digital data will be stored on the researcher's password protected hard drive. Once interviews are transcribed, the digital recording will be deleted.
- Consent forms will be stored in a locked filing cabinet in the School of Education, Auckland University of Technology, office AR213.
- After the analysis is complete, the data will be downloaded and stored in a secure room on AUT premises, in a locked cabinet in the School of Education office AR213.

I give my informed consent for my daughter/son to be a participant in the research investigating modern learning environments as an agent of teaching and learning.

(please circle) Yes No

CHILD'S NAME: ……

PARENT NAME: ……

SIGNED: ……

DATED: ……

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