

The Move to Modern Learning Environments in New Zealand Secondary Schools: Step Forward or Smokescreen?

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Abstract

To prepare 21st century learners for what has become known as the 'knowledge age' the New Zealand government is recognising the need to provide the flexibility of modern learning environments (MLEs), rather than investing in older school buildings (Ministry of Education, 2014b). In conjunction with the tangible elements of buildings, furniture and technology, there is also a major shift in educational practices and pedagogy integral to MLEs (Ministry of Education, 2007). Despite this major change to New Zealand schools, there is a paucity of literature into the perceived benefits, or otherwise, of the introduction of MLEs to secondary schools in the New Zealand context. This study examines the shift towards MLEs in three secondary schools and the changes in pedagogy that are occurring as a result of this change.

A qualitative methodology was employed for this research, focusing on three New Zealand secondary schools, all MLEs. Across the three research sites, semi-structured interviews were undertaken with seven senior leaders and focus group discussions were carried out with three focus groups.

The major findings from this study indicate that a MLE is primarily concerned with *intangible* changes, enabled by the *tangible* shift to new, open, spacious buildings with on-going access to technology. The tangible changes alone do not define a MLE. The effectiveness of the MLE is largely determined by the ability of the staff and community to support and enact the intangible, pedagogical changes that are needed to establish their vision.

This research emphasises the monumental change that is occurring in education and highlights the need for further research pertaining to New Zealand secondary school contexts. It also reveals the need for professional development of school leaders and staff so that they can manage, understand and implement such a significant change in their school communities.

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Table of Contents

Contents

Abstract.....	i
Acknowledgements.....	ii
Table of Contents.....	iii
List of Tables	vi
List of Figures	vii
Chapter One: Introduction.....	1
Introduction	1
Rationale	2
Research Aim	2
Research Aims.....	3
Research Questions	3
Data Collection.....	4
Thesis Organisation.....	4
Chapter Two: Literature Review	6
Introduction	6
Historical Context.....	6
Flexible Learning Spaces	9
Flexibility	9
Openness	12
Access to Resources.....	14
Personalised Learning.....	16
Leadership and the Management of Change of Pedagogy.....	20
Summary	26
Chapter Three: Methodology.....	28
Introduction	28
Research Methodology	28
Research Design.....	30
Sampling Selection.....	30
Data Collection and Analysis.....	31
Semi-structured Interviews.....	31
Focus groups	34

Data Analysis.....	37
Reliability and validity.....	38
Triangulation.....	39
Ethical issues.....	40
Summary.....	42
Chapter Four: Findings.....	43
Introduction:.....	43
Defining a MLE.....	43
Personalisation of Teaching and Learning.....	45
Flexibility.....	45
Openness.....	46
Pedagogy.....	47
Technology.....	48
Use of Space.....	48
Collaboration Between Staff.....	49
Other Factors.....	49
Summary.....	51
School A.....	53
School B.....	54
School C.....	55
Summary of Positives and Negatives.....	57
School A.....	58
School B.....	59
School C.....	59
Summary.....	61
School A.....	64
School B.....	64
School C.....	64
Challenges Identified by Senior Leaders.....	66
Challenges Identified by Focus Groups.....	68
School A.....	69
School B.....	69
School C.....	70
Extra Questions for the focus groups.....	71

Summary	72
Chapter Five: Discussion of Findings, Conclusions and Recommendations	73
Introduction	73
Intangible Aspects	73
Tangible Aspects	80
Personalisation of Teaching and Learning	81
Use of Space.....	82
Articulation and Ownership of Learning.....	83
High Levels of Motivation	83
Blended Learning	84
Restorative Practices.....	84
Period Lengths	85
Shared Practice / Supportive Environment	85
The Importance of Relationships	86
Reflective Practitioners.....	86
School Vision.....	87
Community Support and Perceptions.....	88
Ownership of Space and Equipment.....	89
Summary	89
Conclusions	90
Recommendations	95
Further research recommended.....	95
Limitations of the study	96
Final word	96
References	97
Appendices.....	102
APPENDIX A - Interviews information.....	102
APPENDIX B- Focus Group Information	104
APPENDIX C – Adult Consent forms.....	106
APPENDIX D – Interview Questions	108
APPENDIX E – Focus Group Questions.....	109

List of Tables

Table 2.1: A typology of learning spaces.....	11
Table 2.2: A typology of student –centred pedagogies	18
Table 2.3 Life-Cycle Stage	22
Table 3. 1 School Sample	31
Table 4.1: Characteristics of a MLE as Defined by Participants	44
Table 4.2: Identified Implemented Elements	52
Table 4.3: Structural Changes due to MLE.....	54
Table 4.4: MLE Perceived Positives for Staff.....	56
Table 4.5: MLE Perceived Negatives for Staff	57
Table 4.6: MLE Professional Development	58
Table 4.7: MLE Learners.....	61
Table 4.8: Motivation.....	63
Table 4.9: Identified Challenges.....	67
Table 5.1: Identified Implemented Elements	81
Table 5.2 Changes in pedagogy.....	85
Table 5.3. Challenges in a MLE.....	87

List of Figures

Figure 2.1 Organisational chart for school property planning, funding and project management.....	8
Figure 2.2 The PST Framework	21
Figure 5.1. Model Learning Environment Model	91

Chapter One: Introduction

Introduction

The nature of secondary education is changing in New Zealand with the introduction of 'Modern Learning Environments' (MLEs). MLEs have been defined by the Ministry of Education as a "flexible quality learning space, including adequate acoustics, lighting, heating and ventilation" as well as a "tool [that] encourages schools to think creatively about the way they teach, and introduces 'breakout spaces' – spaces where students can work independently, or cross classroom, in an informal environment" (Ministry of Education, 2014a). Moreover, technology needs to be accessible in these spaces. First world countries are experiencing an influx of technology in a period of rapid and profound change that is affecting global, economic and social structures. As a result of the availability of technology, students today have access to vast quantities of knowledge and information. As Larson and Miller (2011) state: "Through the internet, today's students have opportunities to engage in authentic tasks reaching far beyond their classroom walls" (p. 122). The educational vision set by the Ministry of Education in 2007 is to prepare 21st century learners for what has become known as the 'knowledge age', where young people will become "confident, connected, actively involved [and] lifelong learners" (Ministry of Education, 2007, p. 8). For this to occur, the New Zealand government is recognising the need to provide the flexibility of modern learning environments (MLEs), rather than investing in older school buildings that are often beleaguered with seismic or water tightness issues.

It is challenging to provide modern teaching practices in some older settings. The way students learn today is very different to the past, yet the majority of school learning environments reflect the period in which they were built. These environments were often designed as isolated silos, where a teacher effectively shuts the classroom door and imparts 'expert knowledge'. MLEs, on the other hand, are designed to "provide teachers with the ability to use innovative and imaginative teaching practices that are not the traditional classrooms of the past"(Ministry of Education, 2014b) The Ministry of Education stipulates the need to include MLE upgrades in a school's 'Ten Year Property Plan': "Firstly you must address all urgent health and safety projects, then essential infrastructure, then MLE upgrades" (Ministry of Education, 2014a). MLEs, then, are comprised of certain types of architecture, furniture, technology, teaching and learning programmes, and modes of learning.

Rationale

Despite this major change for New Zealand schools, there is very little research into the rationale and perceived benefits, or otherwise, of the introduction of MLEs in the New Zealand context. However, the move to Modern Learning Environments in New Zealand secondary schools is happening, despite the paucity of research. Far beyond being just a physical move, this major shift in education has pedagogical changes inherent in its shift. There is an expectation that this shift is the 'way forward' for secondary education in New Zealand. The research conducted for this thesis examined if the move to a MLE brings about intangible changes or if the new buildings are simply a 'smokescreen' for change in the way educators prepare students as 21st century learners.

A change as important as this is likely to encounter a level of resistance. Unless staff and communities are supported in the introduction of such a change, it is unlikely they will embrace it. Without this 'buy-in' it is possible the change will be a physical 'smokescreen' rather than a 'way forward' for secondary education in New Zealand. Communities need to be part of the change, rather than have it imposed on them, for it to be effective. With the rapid influx and accessibility of technology, knowledge is available to students at any time and in any place. With students growing up using technology in many different forms the gap between students and an aging teacher population has never been more apparent. No longer are teachers viewed as the 'font of all knowledge'. Students can now access accurate information quickly and independently.

The independence gained through accessing technology has meant that students are now able to manage and direct their own learning. They are active rather than passive recipients of knowledge and are choosing to learn in a way that is meaningful to them. Choice can be motivating for learners. It can also put an emphasis on the personalisation of learning and the flexibility of teaching and learning programmes. The introduction of 'Modern Learning Environments' is an attempt to create this flexibility and personalisation of teaching and learning in a more open and diverse use of space. It incorporates technology as a tool to access and present knowledge. It also changes the way teachers teach and the way they relate to students. They are now seen as 'ako' or learners too' and are being asked to work alongside students in a far more equitable relationship.

Research Aim

The aim of this study was to examine the shift towards 'Modern Learning Environments' (MLEs) in New Zealand schools and the changes in pedagogy that are occurring in some schools as a result of this change. I have taught for 30 years in schools with traditional learning environments, with the last eight years as a member of a Senior Leadership Team, in a school with seismic and water tightness issues. This school is set to be 'transformed' into a MLE. This research set out to identify

and examine the elements that comprise a MLE, and considered which of these elements are being implemented effectively in the three schools studied. The research also critically examined the pedagogical changes that have occurred as a result of teaching in a MLE. While there is a recognised link between MLEs and changed pedagogy, apparent in the Pedagogy-Space-Technology framework (Radcliffe, Wilson, Powell, & Tibbets, 2008), there is little evidence to suggest that there is a direct correlation between the two. Changing to a MLE does not provide surety of the adoption of changed teaching practices. Good practice is likely to occur where there has been consultation, a sense of ownership, professional development and openness to new practices and flexibility. I wanted to make this research practical and constructive for schools, and therefore the research focused on Senior Leaders' and teachers' voices - this enabled me to explore elements of good practice in contexts where schools are operating as MLEs.

The purpose of this study was to contribute to the knowledge base concerning Modern Learning Environments (MLEs) in a New Zealand context. The aims were to define the term 'Modern Learning Environment' and to identify the elements that are being implemented in three schools operating as MLEs in New Zealand. I was particularly interested in determining if the changes to a MLE are tangible or intangible in nature, or both. It was important to ascertain if the change has resulted in pedagogical changes in the way staff teach and the way students learn, as well as identify the challenges senior leaders and staff have faced in the move to a MLE.

Research Aims

1. To define and describe what comprises a 'Modern Learning Environment' in the New Zealand 21st century secondary school context;
2. To identify and critically examine the elements of 'Modern Learning Environments' that are being implemented in three secondary schools in New Zealand;
3. To identify the pedagogical changes that have occurred as a result of teaching and learning in a 'Modern Learning Environment' in these three schools.

Research Questions

1. What comprises a 'Modern Learning Environment' in the New Zealand 21st century secondary school context?
2. What elements of 'Modern Learning Environments' are being implemented?

3. What changes in pedagogy are being practiced in 'Modern Learning Environment' schools as a result of the change to a 'Modern Learning Environment'?
4. What challenges have leaders and teachers faced in the move to a 'Modern Learning Environment'?

Data Collection

Three schools were selected for this study. The three schools are all secondary schools in a large city in New Zealand and are all operating as 'Modern Learning Environments'. The schools were chosen using the following criteria: secondary schools that operate as a MLE; an ERO report that indicated that the schools were operating in an innovative way; and locality (in close proximity to each other). These schools were all large, co-educational, urban secondary schools. I chose to use semi-structured interviews to collect data from the senior leaders in these schools. I interviewed seven senior leaders in total from the three schools. Focus groups were used to obtain data from teachers who work in MLEs. One focus group was conducted at each of the three schools, involving fourteen participants in total.

Thesis Organisation

Chapter One introduces and defines a 'Modern Learning Environment'. It presents a rationale for the choice of thesis topic, followed by the research purpose and specific aims and questions. Finally the choice of data collection is outlined.

Chapter Two starts with an overview of New Zealand education from a historical context. It then examines and critiques the major themes from the literature relevant to 'Modern Learning Environments'. These themes are: flexibility, openness, access to resources, personalised learning and leadership and management of change of pedagogy. The literature comes from a wide range of sources, which are primarily international due to the scarcity of New Zealand research in this area.

Chapter Three outlines and justifies the research methodology and the data collection methods. The issues of validity and reliability are also addressed along with the ethical issues relevant to the research.

Chapter Four summarises the findings from the two data collection tools: the semi-structured interviews of senior leaders; and the focus groups of teachers. Their perceptions of operating in a MLE are outlined in this chapter.

Chapter Five collates and examines the findings from the data collection, identifying major themes from this analysis. These themes were organised into two central areas: tangible; and intangible aspects of a MLE. Chapter Five brings together the literature and findings to form five main conclusions. From these conclusions, seven recommendations are presented, as well as areas for further research and the limitations of the study. In this chapter I also propose a model of a 'Modern Learning Environment' for senior leaders, based on the overall findings of this research.

The following chapter reviews the literature on 'Modern Learning environments' in secondary schools. The literature has provided the background for the research and informed the development of the research questions.

Chapter Two: Literature Review

Introduction

The aim of this study is to examine the shift towards 'Modern Learning Environments' (MLEs) in New Zealand schools and the changes in pedagogy that are occurring in some schools as a result of this change. MLEs have been defined by the Ministry of Education (2014) as a "flexible quality learning space, including adequate acoustics, lighting, heating and ventilation" as well as a "tool [that] encourages schools to think creatively about the way they teach, and introduces 'breakout spaces' – spaces where students can work independently, or cross classroom, in an informal environment" (p.58). Moreover, technology needs to be accessible in these spaces. Technology might include interactive whiteboards and mobile devices, along with the more recent Web 2.0 technologies including blogs, wikis, multi-media sharing sites, podcasting and social networking. Madden, Wilks, Maione, Loader, and Robinson (2012) state that inherent in the continual references to our children growing up in a globalised or digital world is an assumption of the adeptness of students in the use of digital technology in schools settings. These authors believe that this assumption is reasonable because children are so adept at its use in leisure settings. Furthermore, they believe that assisting students to acquire an appropriate and adaptable digital skills set to apply in educational settings is vital in today's schools.

First World countries are experiencing an influx of technology in a period of rapid and profound change that is affecting global, economic and social structures. As a result of the availability of technology, students today have access to vast quantities of knowledge and information. As Larson and Miller (2011) state: "Through the internet, today's students have opportunities to engage in authentic tasks reaching far beyond their classroom walls" (p. 122). The educational vision set by the Ministry of Education in 2007 is to prepare 21st century learners for what has become known as the 'knowledge age', where young people will become "confident, connected, actively involved [and] lifelong learners" (Ministry of Education, p. 8). For this to occur, the New Zealand government is recognising the need to provide the flexibility of modern learning environments (MLEs), rather than investing in older school buildings that are often beleaguered with seismic or water tightness issues.

Historical Context

It is challenging to provide modern teaching practices in some older school buildings and environments. Older schools (prior to 1980) are generally set up as single cell rooms, designed to accommodate a teacher at the front and rows or small groups of students, also facing the front. Furthermore, "the traditional classroom is a product of a teacher-centred pedagogy, framing a

hierarchical relationship between teacher and students whilst closing out other activities and distractions” (Dovey & Fisher, 2014, p. 43). The way students learn today is very different from the past (Dovey & Fisher, 2014; Snehi, 2011), yet the majority of learning environments reflect the period in which they were built. These post-World War Two environments were constructed *en masse* to cater for expanding student numbers (Dovey & Fisher, 2014) and classrooms were commonly designed as isolated ‘silos’, where a teacher effectively shut the classroom door and imparted ‘expert knowledge’. Schools were run by trained professionals who were there to teach the ‘masses’. There was strict discipline and standardisation. Students were expected to respect authority (or be punished!) and to all learn at the same pace (or not). One size was to fit all. If it did not fit, you left school (as many students did at 14 or 15 years old).

Rather than the “know what” knowledge that dominated pre-industrial times, post-industrial or 21st century learners need the “know how” kinds of knowledge, and more. They need to be able to use this knowledge to create new knowledge. Knowledge is now thought of as a resource or something with which to learn and think across the curriculum. No longer are students viewed as ‘vessels’ to be filled with the teacher/expert knowledge. The New Zealand (Ministry of Education, 2007) states that their vision is that young people “will be confident connected, actively involved, and lifelong learners” (p. 8). The term “life-long learners” would suggest a change in the way students are learning, to enable them to transfer the skills taught to other contexts so that they may continue to learn throughout their lifetimes. Inherent in this is the expectation that there will be accompanying changes in the way teachers teach and in the school environments that allow this change of pedagogy to occur.

In the context of New Zealand secondary schools, this means changes in the way teachers deliver the curriculum and also changes in the environment impacting on curriculum development. Teachers of the past were viewed as experts who imparted knowledge behind closed doors. Classrooms were isolated and physical space was not flexible. Architect Prakish Nair (2006) believes that the traditional classroom is a relic from the Industrial Revolution, which required a large workforce with basic skills. Moreover Nair goes on to say that classroom-based education lags far behind when measured against its ability to deliver the creative and agile workforce that the 21st century demands and, furthermore, does not withstand the scrutiny of scientific research. Rigidity of structures is also investigated through the work completed by American principals Karen Hawley Miles and Stephen Frank (2008), who ask educators to also consider the basic organisation of schools that “has remained stubbornly unchanging for the past fifty years” (p. 2). Their research suggests that additional resources are being hampered by outdated and rigid structures, practices,

and norms that make it hard for practitioners to utilise resources to best impact student learning. The openness of senior leaders to address macro-organisation to support pedagogical change is crucial to ensure a successful change process. In other words senior leaders need to address the whole ‘big picture’ issues for the school, allowing their vision to lead the change process and to keep the students at the centre of any decisions regarding practices and structures (Hawley Miles & Frank, 2008).

MLEs, on the other hand, are designed to “provide teachers with the ability to use innovative and imaginative teaching practices that are not the traditional classrooms of the past” (Ministry of Education, 2014b). The Ministry of Education stipulates the need to include MLE upgrades in a school’s ‘Ten Year Property Plan’. All Boards of Trustees must have a Ministry-approved Ten Year Property Plan that forms the main planning tool for a school’s property. These mandatory frameworks are designed to ensure that school buildings are well maintained, meet the curriculum needs of the school and provide the right amount of space. The Ten Year Property Plan is a mandatory part of the Five Year Agreement (5YA) funding cycle and supports a school’s bid for other capital funding. The following diagram (Figure 2.1) demonstrates where the Ten Year Property Plan fits into the Ministry’s funding regime. The Ministry of Education stipulates that schools must firstly address all urgent health and safety projects, then essential infrastructure, then MLE upgrades (2014) . MLEs, then, are comprised of certain types of architecture, furniture, technology, teaching and learning programmes, and modes of learning.

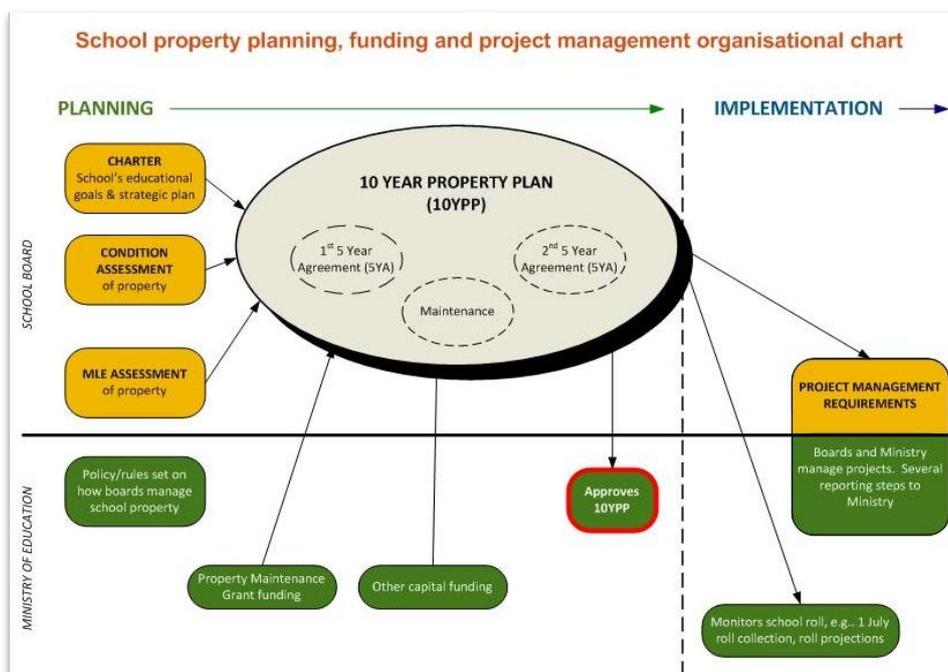


Figure 2.1 Organisational chart for school property planning, funding and project management
Source: (Ministry of Education, 2014a)

Flexible Learning Spaces

Flexibility

MLEs are also known as flexible learning spaces “which essentially relies on the presence of large standardised spaces, which can be divided-up with moveable partitions” (Parnell & Procter, 2011, p. 77). MLEs also contain ‘breakout’ spaces often created out of circulation space that was in the past used for corridors (Ministry of Education, 2014a). These shared spaces between classrooms are to “encourage independent learning, small group work and teachers working co-operatively across spaces” (Ministry of Education, 2014a). Furthermore, Shank (2005) notes that teachers do not ‘own’ classrooms, but share them with other teachers. MLEs have the means of creating spaces of different sizes to support different activities and individual needs in a school, with the flexibility to be reconfigured by its users to support a variety of learning needs.

While MLEs can still facilitate traditional pedagogies such as direct instruction if needed, they also offer teachers and students flexibility, openness and access to resources (including technology) (Osborne, 2013). Flexibility might include the ability to combine two or more classes together or to split them into smaller groups depending on their interest areas and spread them over a wider area. It could involve different groups working on different activities and tasks, using technology, in breakout spaces, or on the deck, or in an area outside the classroom (Nair. P, 2014). It may involve students focusing on identified areas of weakness to develop their skills in a ‘workshop’ in a particular learning area. While there is a central ‘home base’ where teaching and learning occurs, the flexibility of a larger MLE with moveable partitions can give teachers and students options for group work and for team-teaching. Sliding glass walls can be used to open up or close down an environment, whole walls can be a whiteboard, and whiteboards can be moveable. Mobile screens on wheels can have “dry-erase board on one side and tack-board on the other ... [creating] an impromptu workspace for collaboration and brainstorming in whatever areas students choose to wheel them” (Grayson, 2010, p. 3). Teachers can change the way students are facing or the composition of the groups or classes in which students are working. Everything can be designed with the needs of the students in mind.

Flexibility is the key principle of an MLE, according to Bruce Curtain, Principal Architect specialising in public buildings and global Opus Sustainability Manager. Curtain (2014) believes that “while we cannot anticipate all the future needs for educational facilities we can know with certainty that they will change. Teaching spaces can be adapted and support the educational agility of teachers and students will be in an environment that can deliver outstanding educational outcomes” (Multimedia, 2014, p. 1). Curtain urges us to ‘break out of the box’ and build spaces that support innovation and

creativity. Grayson asserts that moveable wall solutions create flexible learning spaces that provided an ideal complement to technology-based education. She further notes the irony that structures that are usually meant for creating barriers can be just the thing to make collaborative learning happen (Grayson, 2010).

A flexible learning space is generally portrayed as one which can be reconfigured by its users to support a variety of learning needs. Dovey and Fisher (2014) further distinguish between two types of flexibility: convertibility and fluidity, which they state “operate on different rhythms and at different scales of control” (p. 58). ‘Convertibility’ refers to the structures that have a relatively high use of reversibility through the use of removable (folding, sliding) walls. This allows for the reversible convertibility from traditional to constructivist pedagogy and back, often requiring walls and furniture to be moved, linking to changed pedagogical regimes. Implicit in this research is the assumption that architecture, to some degree, influences pedagogy. This is supported by the work of Hill and Epps (2009) who found that “certain measures of the student evaluation of teaching [were] impacted by the physical learning environment” (p. 18). However, the adoption of convertibility may be controlled by rules set by principals rather than teachers and students, and may not be possible during the course of a teaching lesson. Thus, Dovey and Fisher (2014) state that “the rhythms of convertibility are much slower” (p. 58). In other words, the flexibility of a convertible classroom may be impeded to such a degree that folding or sliding doors remain closed, and their existence is of little use.

The other type of flexibility, labelled as ‘fluidity’ or ‘agility’ by Dovey and Fisher (2014), describes the ways that the building enables flexible flows from one activity to another within the constructivist pedagogy. The scale and openness of the space enables the capacity for flow and change between activities within the cluster. On the other hand, “as the space becomes more exposed and noisy, as the classroom becomes ‘commons’ and then ‘streetspace’, it can constrain self-directed and reflective activities” (Dovey & Fisher, 2014, p. 58). Dovey and Fisher (2014) also stress the importance of the distinction between commons and streetspace as “the existence or absence of through traffic enables and/or constrains a different range of learning activities with impacts on privacy, group identity and the acoustic environment” (p. 49).

The distinction between streetspace and commons is a difficult one because, as Dovey and Fisher (2014) state, “commons so easily becomes streetspace when subject to cross circulation” (p. 59). While streetspace is the visible face of progressive pedagogy and student-centred learning, it can be utilised whilst still preserving traditional practices. Unless there is a clear vision for progressive pedagogy, streetspaces may simply become the corridors of traditional classrooms. Dovey and

Fisher (2014) highlight the fact that streetspaces are often touted as innovative, yet they can supplement rather than transform traditional pedagogies and perhaps even camouflage a lack of change. Commons offer a greater diversity of activities; while streetspaces also double as circulation spaces and are therefore easier to build within a strict budget than commons. Opponents have criticised potential similarities of MLEs as a reversion to the problematic ‘open plan’ designs of the late 1960s and early 1970s (Parnell & Procter, 2011). There were many reasons for the failure of open plans (including acoustics), but it was a confusion between openness and flexibility, along with a tenuous link to new learning pedagogies that ultimately contributed to their demise (Dovey & Fisher, 2014). Furthermore, these researchers warn us that most open plan designs are often not the most adaptable because they constrain choice and the danger is that “open plans are cheaper to construct than segmented plans and can be supported for budgetary rather than pedagogical reasons” (Dovey & Fisher, 2014, p. 58). In their study of 59 plans for international, notable and award-winning middle schools, Dovey and Fisher (2014) classified the spatial types within the learning categories into six primary categories as described in Table 2.1.

CLASSROOM	A traditional closed learning space of about 40-60 square metres for 20-30 students. If learning spaces are fully ‘closeable’ to this size with flexible walls then they are classified as classrooms.
COMMONS	A learning space of greater than about 40 square metres that cannot be fully closed into a 25-student classroom (or smaller) and is not the major access route to any other commons or classroom, hence protected from major through-traffic.
STREETSPACE	An open learning space over about 3 metres width (allowing activity and circulation) that cannot be closed into classrooms and is exposed to major through traffic as the primary access space to other learning spaces.
MEETING AREA	A small learning area of less than 40 square metres accommodating groups of 5 to 20. While such spaces may house seminars, the key criterion is that they cannot house a traditional class size.
FIXED FUNCTION	Any learning space fitted for specialised use such as ‘Arts’, ‘Science’, ‘IT’, ‘Computers’, ‘Wet Area’, ‘Music’, ‘Drama’, ‘Resources’.
OUTDOOR LEARNING	Any outdoor area defined on the plan as an integral part of the learning cluster, generally labelled ‘outdoor learning’, ‘outdoor room’ or ‘learning court’. Simple access to outdoors does not qualify.
Source: (Dovey & Fisher, 2014, p. 48)	

Table 2.1 categorises the main types of spaces found within learning clusters beginning with the traditional classroom, or fully closeable space, and extending to commons, streetspace, meeting areas, fixed function space and finally the outdoor learning space. The six categories overlap with each other and are not mutually exclusive. Some spaces are dependent on others and some can be transformed from one type to another. For example an outdoor learning area may be used as a meeting area or commons.

Common space has been extended to common office spaces, common time and common work at a MLE in a Polish Regional High School, according to a study conducted by Shank (2005). Teachers at this school don't 'own' their own classrooms and they also share common office spaces, where "the most valued means of support and learning cited by new teachers [...] are the collegial interactions that common workspace, common planning time and common tasks make possible" (p. 17). Common planning time enables team teachers to plan their curriculum together, jointly assess and moderate students' work, and interact with colleagues, parents and students as a group. The structural conditions provide teachers with the time and the common workspace to make joint decisions about their next teaching steps (Shank, 2005). This recognises not only the importance of the relationship between teachers and students, but also the co-construction that occurs between teachers and other teachers (Harris, 2008).

Openness

Openness may be defined as having an open space capable of housing more than one class. Openness occurs in an environment that traditionally has fewer walls, more glass and often uses the idea of a learning commons (or hub) which is a central teaching and learning space that can be shared by several classes (Osborne, 2013). Teachers are observed, and also observe others, on a daily basis. This awareness provides the opportunities to work collaboratively in a cross-curriculum programme so that teaching and learning can be complemented and enhanced. Teachers who have strengths in a particular area, e.g. graphic design or Information Technology (IT), can use these strengths to support a wide range of students. It also provides the opportunity for teachers to access what students are learning in other learning areas and levels, and to learn from each other. Osborne (2013) claims that open and flexible spaces also create more collaborative communities of practice for teachers. He believes that having access to the teaching practice of your colleagues to model and to be modelled on, supports the development of effective teaching practice far more than in an isolated, private space. It is further argued that the sharing of practice can provide rich opportunities that better shape and enhance student learning (Campbell, Saltmarsh, Chapman, & Drew, 2013).

In a supportive environment, the openness of an MLE can potentially assist teachers to become openly reflective practitioners. This view is further supported by Nieto (2003) who claims that flexible classrooms, within professional learning communities, afford the opportunities which support teachers in a “need to continually rediscover who they are and what they stand for through their dialogue and collaboration with peers, through ongoing and consistent study, and through deep reflection about their craft” (p. 125). Reflective practice is also viewed as a strength of MLEs by Campbell et al. (2013) who note that once the walls were ‘removed’ in schools, individual teacher practice becomes exposed to the witness and critique of others in the teacher group. In this shared space, these authors noted that new cultures of practice emerged that supported teaching as a shared practice. The collegiality of a professional learning community is further advocated by Lieberman and Mace (2009) who report that “in Japan, Singapore and South Korea, teachers spend 35% of their time teaching students, while the rest is spent on a variety of activities to enhance their practice, including having shared office space where teachers have access to materials and to each other for large portions of the day” (p. 79).

The idea of shared practice with teachers being more exposed and visible, sharing ideas, skills and working with each other more closely, has become part of a movement to ‘de-privatize’ practice, presented as a fundamental motivation in changing the physical classroom environment (Campbell et al., 2013; Hill & Epps, 2009; Lieberman & Mace, 2010). These researchers advocate for the ‘de-privatization’ of practice as a “pathway towards open sharing, collegiality and the replacement of formal professional development models with learning communities” (Campbell et al., 2013, p. 212). Replacing traditional professional development with the sharing of practice is also advocated by Lieberman and Mace (2010) who contend that “when professional development opportunities start with other people’s ideas first, they deny what teachers know. Starting with teachers’ practice invites teachers into the conversation and opens them up to critique, to learning, and to expanding their repertoire” (p. 86). Such an approach to professional development shifts the emphasis, with the teacher becoming the driver of their own learning. It also presents early-career teachers with an opportunity to learn from more experienced practitioners and for experienced teachers to observe new and innovative practices in a supportive, non-threatening environment.

On the other hand, as noted by Woolner et al. (2012), whilst teachers may observe each other, this may not necessarily lead to reflection on practice or the formation of collegial learning communities. They highlight the need to ensure deliberate support for a process of change in creating new spaces for teaching and learning. In their study of three primary schools built or renovated around concepts of ‘non-traditional’ learning space, Campbell et al. (2013) noted that where multiple

teachers were present, the management of professional relationships within teaching groups was required. Furthermore, they concluded that “often the intersections between both these conceptualizations – teaching to student groups, and teaching in teaching teams – had a direct impact on the quality of the learning that was evident within the classrooms” (p. 215). The openness of a flexible MLE therefore necessitates the development of skills for both staff and students, such as working as part of a team. It also requires a wider appreciation and empathy for others practising in the space. Moreover, Campbell et al. (2013) conclude that, due to a dramatic acceleration of the building of MLEs in Australia as a result of suddenly available government funding, there is a lag in the provision of the needed professional support required to realise the potential of these settings. Time and properly managed change were highlighted in this study as two successful elements in the transition of pedagogies and teacher practice to best utilise flexible learning spaces.

Research suggests that a MLE is an important tool in the creation of a 21st century learning environment (Jankowska & Atlay, 2008; Schneider, 2002; Woolner et al., 2012), but *not the only factor* (Woolner, Hall, Higgins, McCaughey, & Wall, 2007). Flexible learning spaces can only make a difference if the users of the spaces also have a flexible attitude (Parnell & Procter, 2011). Their findings show that flexible learning space is maximised when children and teachers experience together how their environment can support their learning needs. There is a consistent view that learning spaces need to be more flexible and student-centred rather than teacher-centred, as well as having the necessary technology to meet student and subject needs (Jankowska & Atlay, 2008; Scott-Webber, 2012; Wilson & Randall, 2010).

Access to Resources

Access to resources, including technology, can be enhanced in a MLE. It can be argued that in response to the development of 21st-century skills and the greater incorporation of technology, there needs to be a reinvention of the way classrooms and schools are constructed (Campbell et al., 2013). In a move away from the traditional computer suite, a MLE typically contains a learning common surrounded by breakout spaces. These spaces, according to Osborne (2013), often contain “a mixture of wireless and wired technology offering access as and when students need it, within the flow of their learning” (p. 4). These areas are designed to give the freedom for students to use technology in a way that best supports their learning at the stage to which they are at. Grayson (2010) reports that “wireless access through adjoining classrooms makes for seamless transport of technology, no matter how the walls are configured”(p. 2). Students have the ability to work in small groups or on their own. The Ministry of Education website (2014) states that flexible teaching

spaces can be expanded or reduced in size depending on what's being taught and what technology requirements are necessary.

The move to more flexible technology solutions directly correlates to a study carried out in Australia by Pretto (2011) that explored the extent to which the layout of traditional computer laboratories impacted on teacher pedagogy. This work concluded that in traditionally-designed computer labs “there was little flexibility to move computers or desks to allow for group work, class discussions or project collaboration ... [that] in itself promotes a Stand and Deliver teaching practice and offers very little flexibility in type/s of teaching and learning that takes place” (p. 1029). Pretto (2011) concluded that the layout of the computer lab imposed a style of pedagogy on the teacher by encouraging a didactic, ‘lecture-style’ approach that runs contrary to constructivist or student-centred principles. In contrast to this, in today’s interconnected and technology-driven world, a learning environment can be virtual, online, and remote; in fact it does not have to be a place at all. Learning is just as likely to happen in virtual space as in physical space. With the support of access to digital resources in a variety of ways, learning and discovery can happen anywhere.

Schools are under increasing pressure to provide up-to-date technology for students within budgetary constraints. ‘Bring Your Own Device’ (BYOD) is becoming increasingly popular in schools since the establishment of the first ‘Open Source’ High School by Mark Osborne in 2009. Osborne believes, however, that BYOD is not the answer for every school; schools must decide what system is the ‘best fit’ for their community (Osborne M, 2014) . The flexibility of a BYOD system is further highlighted by Grayson (2010), who reports that “with the addition to the media centre of modular chairs that house students’ laptops, as well as access to a conference table with a large flat-panel monitor where users can plug in their laptops and collaboratively share their work, students now have the makings of a totally mobile, anytime/anywhere meeting room” (p. 4). Interestingly, mobile screen systems were viewed by students in Grayson’s study as the most important feature to afford a sense of privacy and aid collaborative learning. The spaces created may also provide opportunities for quiet activities such as reading, or project work, group work, constructing or presenting. Each space may have multiple functions and can be viewed as a potential learning area.

Whether a school chooses to use BYOD or a mixture of wired and wireless systems is an individual decision based on the school’s vision and community resources. However, Osborne (2014) claims that the inclusion of technology is not an option. He states: “One of the features of future focused education is embedded, seamless technology so however you choose to do that in a way that suits your community – that’s the way you go about it. It is not an option not to have technology in there” (M. Osborne, personal communication, 19th May, 2014). Technology allows students to have

global connectivity. Furthermore, according to Osborne, while no school or teacher is the sole font of expertise, technology allows students to learn and lift their own practices, sustain learning over time and become lifelong learners. Technology also allows us to tailor our own pathways as learners, and schools need to support staff to do this in a symbiotic way. This view is also supported by the research findings of Madden et al. (2012) who stress the importance of the role of the school leadership team in “undertaking carefully designed professional development to support the teachers” and that it “needs to be ongoing, targeted and effective if it is to mitigate teachers’ fears and anxieties and address their learning needs (for example, digital technology)” (pp. 32-33). Madden et al. (2012) conclude that the digital student not only requires a different work space but also different teachers who can deliver a differentiated learning programme that incorporates a substantial technological approach. Furthermore, these authors believe that, with learning activities becoming more collaborative, spaces need to be more flexible and adaptable to cater for both personalised and group-inquiry-based project work and to enable a diverse range of learning opportunities.

Personalised Learning

At the heart of the argument for flexibility is personalised learning and the move to cater for 21st century learners (Parnell & Procter, 2011). Personalised learning has been defined as a “highly structured approach [that] creates an ethos in which all pupils are able to progress, achieve and participate” (National College for Teaching and Leadership, 2012). The move towards MLEs provides increased flexibility enabling more opportunities for blended learning, group work or individualised personalised learning alongside technology in break-out spaces (Wilson & Randall, 2010). Therefore, MLEs can be seen as tools or enablers in the move to more personalised learning. Personalised learning is student-centred rather than teacher-centred. Learning spaces that reflect this, will have, according to Wilson and Randall (2010), “the necessary technology and furnishings to meet student and subject needs; support pedagogic, multidisciplinary, multimedia formats that engage the student; and be flexible, ergonomically comfortable, functional and multi-usable” (p. 2).

The purpose of the MLE is to support learning among individual students. The main thrust of personalising learning is the move away from a dependence on teacher-centred modes of instruction (Madden et al., 2012). Inquiry-based learning could be a key strategy for learning and exploring information in more than one subject area at a time and across disciplines. Madden et al. (2012) conclude that “agile learning spaces have provided a creative setting for active and inclusive inquiry and problem-based learning, enabling a myriad of interactions between students and drawing all into the learning process” (p. 32). These authors noted increased enjoyment of learning

activities, engagement in the learning process and ability to articulate their preferred learning styles, from students in a MLE. This positive influence on the students' experience and engagement with learning processes is reflected in the findings of other researchers (Jankowska & Atlay, 2008; Wilson & Randall, 2010). Conversely, Hammonds (2010) raises his concern about the apparent lack of urgency for change in what he describes as 'Industrial Age' secondary schools where he claims "disengaged students are reaching frightening proportions" (p. 11).

The starting point in the establishment of a MLE, according to Osborne (2014) is the vision. He believes that the school needs to consider what their vision of personalised learning is; if their vision is totally centred around the students and everything comes from their interests, then it will look slightly different from a school that has a vision that is more teacher directed (M. Osborne, personal communication, 19th May, 2014). Personalised learning starts with an individual student and a vision based on what they need to learn, how to do it best, and what kind of support and environment will best assist them. Needs and goals are defined and set tasks are broken down into manageable chunks (Eiken, 2011). Staff become 'coaches' as students develop personal responsibility for, and ownership of, what they learn. This shift of thinking requires children and teachers being 'active together' in the learning process and leads to the responsiveness and reciprocity that is often referred to as a 'community of learners'. A community of learners "relies on the active involvement of adults and children together [...] with varying but coordinated responsibilities" (Rogoff, Turkani, & Bartlett, 2001, p. 7). *The New Zealand Curriculum (Ministry of Education, 2007)* advocates that 21st century learners need to be "confident, connected, active, life-long learners" (p. 7) and advises pedagogies based on shared learning wherein teachers and students work together in a learning community each contributing to a shared endeavour. Moreover, a community of learners is in harmony with Maori principles of *whanaungatanga* and *ako*, argued to nurture the inter-related spiritual, intellectual, social, emotional and physical dimensions of learning (Tangaere, 1997).

Schools that start with the students and their vision of what they need to learn and how that can best be supported, have been functioning in many countries globally. Operating as a comprehensive platform for personalised education in 33 secondary and upper secondary schools in Sweden and two secondary schools in the United Kingdom, Kunskapsskolan (KED) is a unique programme where "Students set their own objectives, work independently and are assessed against their personal academic goals ... every step and element of learning is defined-from teachers' roles to architecture-in order to facilitate personalised learning" (Eiken, 2011, p. 1). In these schools the sole purpose is to support learning among individual students and architectural design is an important and often recognised part of the concept, but the last part of the equation. Eiken (2011) reports that personal

coaching is at the heart of the KED programme with a combination of “goal setting, weekly coaching, personalised scheduling and timing and a unique curriculum maintained on the Web-based Learning Portal” (p. 2). There are no corridors in KED’s programme; all spaces are potential learning spaces for collaborative purposes or individual studies. Students can log onto the Portal and continue their learning outside of class hours. Common features of all rooms are light, openness and extensive use of glass and open space, visibility and multiple uses of spaces. These elements are all pillars of KED’s architectural programme, where every space including the cafeteria is considered a learning space.

In accordance with their typology of learning spaces (Table 2.1), Dovey and Fisher (2014) have developed a list of six key teaching/learning practices based on constructivist pedagogies (Table 2.2). These can be used to understand and analyse the relationships between space form and structure. It comprises a continuum of group size from large group presentations, through four kinds of smaller interactive groups to the reflective activities of the single student. This typology is based in pedagogical theory; the categories are the tools for analysis. Dovey and Fisher (2014) state that “the different pedagogical practices morph rapidly and frequently into each other as groups form and break up with different activities over the day” (p. 46). Students and staff move between different activities, connecting pedagogical practices over space and time, as groups segment and amalgamate.

PRESENTATION (25-150 students)	Students or teachers present to a largely passive group. Group size may vary from one class cohort to a full form or year. Such activities facilitate efficient communication of information.
LARGE INTERACTIVE (25-75 students)	Activities that move seamlessly from large to small group and back; often organised in sub-groups of 4-6 that can be subdivided into 2s or 3s. Facilitates peer-to-peer learning and team teaching.
MEDIUM INTERACTIVE (10-25 students)	Activities with a similar flow of movement to the above, but with a smaller group size and generally one teacher.
CREATIVE INTERACTIVE (10-25 students)	Interactive activities but with the emphasis on hands-on learning in addition to pens and keyboards, plus access to a range of resources that may include art materials, wet areas, laboratory or outdoors.
SMALL INTERACTIVE (2-5 students)	The ‘breakout’ model of problem-based and peer-to-peer learning with small autonomous groups that can disperse and take responsibility for their learning.
REFLECTION (1 student)	Singular activities that include reading, writing or hands-on research to meet learning objectives.
Source: (Dovey & Fisher, 2014, p. 47)	

There is a clear link between the constraints and opportunities offered by adaptation of the classroom structure and teacher practice. Dovey and Fisher (2014) conclude that “just as the classroom reproduces teacher-centred pedagogies, the irreversibility of the open plan can coerce teachers into new pedagogies” (p. 58). The issue of the practices of power and how they are implicated in the structure of the buildings can be indicative of the shift from teacher-centred to student-centred personalised learning. Traditionally schools have been very hierarchical, with the principal and teacher controlling curriculum and timetables in what Dovey and Fisher (2014) describe as a ‘power over’ student relationship, controlled through discipline. Closed classrooms placed the teacher at the front, with the students in rows or small groups, facing forwards.

A MLE can provide choice for students as they take more control over setting personalised goals and deciding how and when they will achieve them and co-constructing how they will be assessed. Teachers become facilitators in an apparent shift in the balance of power. Instead of teachers being ‘the keepers of the knowledge’, they are encouraged to work alongside students to assist them to become liberated, connected, lifelong learners. Osborne (2014) comments on the increased flexibility and agency possible in a MLE, stating that because teachers have got a wider range of resources or spaces, they can therefore give the students more control over how they learn, where and when they learn. He believes that “agency is quite a vital thing. If kids have more choice and more agency over their learning, they are developing the skills that lead them to being a lifelong learner” (M. Osborne, personal communication, 19th May, 2014). Using technology, students are encouraged to become globally connected and to carry learning from school to home, with parents viewed as first teachers in an environment of open communication.

MLEs, alongside progressive pedagogies, involve more collaboration of staff with students and can make the way for student-centred empowerment or ‘power to’. In many cases discipline and control is maintained through surveillance and according to Dovey and Fisher (2014) “some plans locate the staff area with a panoptic view over common learning spaces” (p. 60). The desire to enable student-centred learning and to maintain staff control can result in some form of camouflaged surveillance, often on the edge of a cluster of students working, leaving the cluster as student-centred. Dovey and Fisher (2014) stress that the significant question of design considers what kinds of plans have resilience and remain open to new pedagogies, rather than reverting to traditional classrooms over time. These researchers conclude that the most resilient of the plans are those with a diversity of learning spaces and high levels of fluidity. They state that fluidity is a “property identified with the multiplicities practices of student-centred pedagogies [...] while convertibility enables openness and closure-an architecture of reversible change” (p. 61). The

cautionary proviso is that convertible plans embody the tension between traditional and constructivist pedagogies and they may in fact reproduce such tension. Conversely, the plans that stipulated dedicated 'commons' embodied new student-centred pedagogies and 'burnt the bridges' of traditional teaching.

Leadership and the Management of Change of Pedagogy

The move to a flexible learning space and to personalised learning may involve a change of pedagogy and teaching practice. It is well known that teachers will not change their instructional models "simply by being told to do so" (Ball & Cohen, 1999, p. 3). They need to experience how this change will improve student learning. The first step for a school that is moving towards a MLE, according to Osborne (M. Osborne, personal communication, 19th May, 2014), is to revisit the school vision or mission to ensure it reflects the community's vision as to what learning should look like. There is no one answer to creating a MLE; it emerges from the vision for learning. What is consistent is what is known about good, positive learning; that it needs to be active and reflective. Osborne argues that for this reflection to take place there needs to be acoustically separate, quiet spaces. This space gives teachers the ability to personalise learning and be more flexible and inclusive by being able to adapt the space to the learners' needs. However Osborne warns that we need to move beyond the idea that a new fresh space is all that is needed for exciting learning, and understand that the change is a pedagogically-significant shift, as opposed to something physical.

In the creation of a MLE the balance between technology, space and pedagogy is a tenuous one. There has been a tendency for initiatives in learning spaces to be technology-driven rather than pedagogy-driven. When pedagogy is the focus, there tends to be more learner-centred, personalised learning occurring. The report "Designing Spaces for Effective Learning Design" (JISC) explores the relationship between learning technologies and innovative examples of physical space design, advocating that the design needs to be flexible, future-proofed, bold, creative, supportive and enterprising (Wulson, 2013). However, Radcliffe (2009) believes that both the real and virtual dimensions of pedagogy, technology and the design of learning space are all vital and there is a nexus between the three. He presents a pedagogy-space-technology (PST) framework for guiding the design of learning spaces which "takes account of these three factors in informing the conceptual design and post-occupancy evaluation of either discrete learning environments (e.g. individual rooms) or networks of places (e.g. a whole campus)" (p. 11). This framework (Figure 2.2) has been developed "through a collaborative, interdisciplinary and participatory process, drawing on knowledge from all the stakeholder groups"(p. 13)

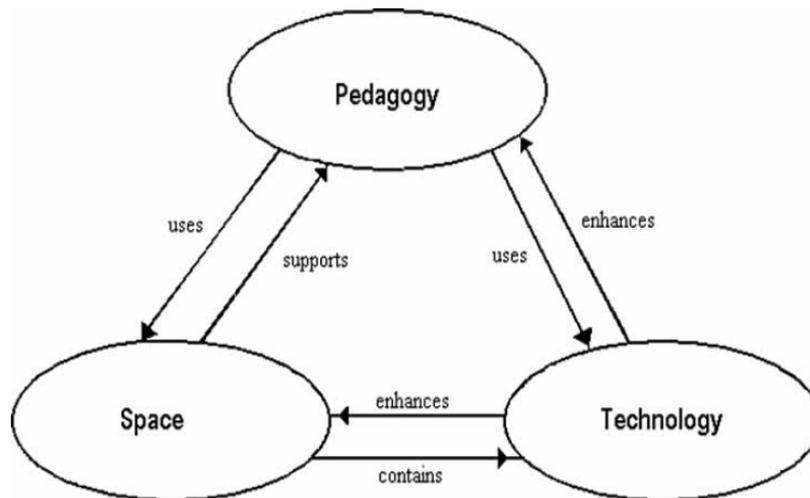


Figure 2.2 The PST Framework
(adapted from Radcliffe, 2009, 13).

Each of the three elements: - pedagogy, space and technology- influence each other in an interdependent fashion. For example, a desired pedagogy may influence the shape and use of a space, or a space size and shape may affect the technology opportunities (or constraints) offered within it. While Radcliffe’s (2009) diagram shows interdependence, he does suggest that “pedagogy seems to be the first logical element, then space and finally technology” (p. 14). This does not, however, suggest a hierarchy, but rather an entry point through an iterative process. Radcliffe (2009) further suggests breaking the framework into delivery stages and attaching questions to what he titles the “life-cycle stages” (p. 15). These questions (Table 2.3) overleaf can provide useful reference points in the iterative process of evaluation and review in the move to a MLE.

Leading change is one of the key leadership activities for a principal, and the flexibility of an MLE may not necessarily bring about a move to personalised inquiry-based learning unless it is well led and managed. Campbell, Saltmarsh, Chapman and Drew (2013) highlight the need for time and investment in properly managed change to best utilise agile and flexible learning spaces. The importance of a context to lead change in pedagogy that involves staff in meaningful learning which is targeted, on-going, closely related to classroom teaching and based on data is a view supported by many researchers (Campbell et al., 2013; Lynch, 2010; Woolner, Clark, Laing, Thomas, & Tiplady, 2014). Using effective research into change management is an important step in leading and managing change. Osborne (M. Osborne, personal communication, 19th May, 2014) believes that people need to know why they are changing or what the compelling reason for change is. There needs to be a coalition of people who are making decisions about the right way to proceed and there needs to be good communication with the

Table 2.3 Life-Cycle Stage

Focus	Conception and Design	Implementation and Operation
Overall	<p>What is the motivation for the initiative?</p> <p>What is intended? What initiated the project? Who are the proponents and opponents? Who has to be persuaded about the idea? What lessons were learned for the future?</p>	<p>What does success look like?</p> <p>Is the facility considered to be a success? By whom? Why? What is the evidence? Does this relate to the original motivation or intent?</p> <p>What lessons were learned for the future?</p>
Pedagogy	<p>What type(s) of learning and teaching are we trying to foster? Why?</p> <p>Why is this likely to make a difference to learning?</p> <p>What is the theory and evidence?</p> <p>What plans will be made to modify programs or courses to take advantage of the new facilities?</p> <p>What education or training for academics and other staff is built into the plan?</p>	<p>What type(s) of learning and teaching are observed to take place? What is the evidence?</p> <p>What evaluation methodology or approach was used to gather and analyse data?</p> <p>Who was included in the data gathering and analysis? Students? Faculty? Staff? Administrator? Senior Leadership? Facilities managers and technology staff?</p>
Space (including environs; furniture and fittings)	<p>What aspects of the space and provisioning of furniture and fittings will foster these modes of learning (and teaching)? How?</p> <p>Who is involved in developing the design brief? Why?</p> <p>Which existing facilities will be considered in developing concepts? Can we prototype ideas?</p> <p>Who is involved in the assessment of concepts and detailed design? Why? What are their primary issues and concerns?</p>	<p>Which aspects of the space design and equipment worked and which did not? Why?</p> <p>What were the unexpected (unintended) uses of the space and facilities that aided learning or facilitated teaching? Do these present ideas for future projects?</p> <p>How was the effectiveness of the use of space to aid learning and teaching measured? What were the different metrics used?</p> <p>Where there synergies between this and the other spaces that enhanced learning?</p>
Technology (ICT; lab and specialist equipment)	<p>What technology will be deployed to complement the space design in fostering the desired learning and teaching patterns? How?</p> <p>In establishing the brief and developing concepts and detailed designs, what is the relationship between the design of the space and the selection and integration of technology?</p> <p>What pedagogical improvements are suggested by the technology?</p>	<p>What technologies were most effective at enhancing learning and teaching? Why?</p> <p>What were the unexpected (unintended) impacts (positive and negative) of the technology on learning and teaching?</p> <p>How did technology enhance the continuum of learning and teaching across the campus and beyond?</p>

Source: (Radcliffe, 2009)

teachers and with the community. The role of a Senior Leadership Team is to understand the culture of their school, including the underlying assumptions and beliefs, and to bridge the gap in helping staff to best utilise the MLE to implement pedagogical change to personalised learning.

Osborne (2014) suggests that the starting point in managing change is to have a very clear vision. This should include a self-review process for the school. CORE Education (2013) categorise this self-review into dimensions of the WHY, the WHO and the HOW of learning and have developed a matrix that has a series of ten elements of a MLE with corresponding reflective questions as a useful starting point for schools. Managing a change involves applying psychological breakthroughs to transform attitudes and behaviours according to Lawson and Price (2003). They suggest that employees “will alter their mind-sets only if they see the point of the change-at least enough to give it a try” (p. 31). These authors state that there are four conditions for changing mind-sets: a purpose to believe in, the surrounding structures (reward and recognition systems, for example) in tune with the new behaviour, the skills required for change, and consistent role models . They surmise that “each of these conditions is realized independently; together they add up to a way of changing the behaviour of people in organizations by changing attitudes about what can and should happen at work”(p. 31).

Everyone is at a different point of readiness, so professional development has to be personalised, responsive and start from a position of strength. Starting with what is working well could then move to new opportunities and the possibilities that new spaces would allow, such as team-teaching and co-teaching. In a year-long study of 26 Social Studies teachers from three regions, Sinnema, Sewell and Milligan (2011) highlighted the benefits of evidence-informed collaborative inquiry for teachers’ professional learning: “Through sustained, collaborative professional learning, teachers embedded new pedagogical understandings based on outcomes-linked evidence, and developed a greater capacity to learn in and from data in their everyday practice. They came to identify themselves as practitioner researchers” (p. 258). This view is further supported by Lynch (2010), who identifies the principal’s role as being to lead this change initiative with their staff.

Such a fundamental change in teacher pedagogy is likely to engender some form of teacher resistance and anxiety. Enacting change in educational practices is notoriously difficult, with gaps developing between policy and practice (Woolner et al., 2014). Kotter (1996) states that “whenever human communities are forced to adjust to shifting conditions, pain is ever present”(p. 4). Knight (2009) suggests that resistance is “often the result of poor communication, personnel management, and poor implementation of programmes” (p. 508). Woolner et al. (2012) suggest that apparent resistance to change can be understood as arising from “unchallenged cultural assumptions held by

members of the school community, but this leaves room for suggested change to be apparently accepted by teachers without it significantly influencing their practice and creating pedagogical change” (p. 57). Knight (2009) promotes a series of questions that can bring to the surface reasons for this dissonance between teachers and change agents. These involve considering if the teaching practices are powerful and easy to implement; if the teachers get to experience the practices, while doing the thinking and being treated with respect; and, finally, consideration as to what has happened in the past in relation to sustainable professional development.

Consideration of why some teachers resist, coupled with the objective of making it easier for teachers to implement new practices, is likely to result in a more positive change process for those leading change. Woolner et al. (2012) question whether change occurs differently if driven from ‘below’ by the classroom experiences of teachers and students as active participants, rather than being seen as coming from ‘above’ from Senior Leadership Teams in top-down ‘reform’. They suggest school users working in partnerships to suggest joint understandings of existing settings and practices and to consider possible changed physical environments and learning practices.

In a recent study in the UK, researchers considered how a school community planned towards a change to enquiry-based learning in flexible spaces in a move to a MLE (Woolner et al., 2014). Due to a loss of traditional employment in the area, falling school roles and decreasing achievement in the lower school years, a change of pedagogy and a desire by senior leaders to establish the school as distinctive were motivating forces in the initiative. Existing departments were to be combined into ‘faculties’, bringing together subjects and encouraging more inter-disciplinary work amongst staff: “In essence, the school leaders were hoping to change the culture of the school through making alterations to tangible aspects such as department organisation, curriculum and, importantly, the physical space”(p. 149). Because this school was built and formed through the merger of two existing, operating schools, lack of planning time meant that staff and students were not able to be ‘active participants’ involved in the design process. Instead the time was used to attempt to shift staff and student cultures, particularly relating to learning and teaching. The plans for change of practice were explored alongside wider school-wide plans for change, in conjunction with the experiences and understandings of the teachers involved.

Preparation for the change was centred on the use of an existing school hall in an ‘experimental week’. During a theme-based week staff worked across existing departments within the new faculties, with each faculty having responsibility for arranging enquiry-based learning relating to their disciplines for one day of the week. Staff had input into the choice of students participating, with a wide range of abilities represented, but students with challenging or difficult behaviour being

excluded from the experiment. Prior to the week senior leaders noted a level of cynicism and lack of aspiration amongst the students. The staff were given teacher development where they were engaged in dialogue and had the opportunity to practice approaches. The staff involved were open to pedagogical change that they hoped would be more engaging, foster group work and collaboration amongst students, and encourage risk taking and greater independence amongst their students. Woolner et al. (2014) reported that “It was hoped that a more relevant, enquiry-based learning approach would ultimately raise students’ aspirations and achievement” (p. 152).

Concerns from staff prior to the week centred on potential noise levels, shared planning and the time needed for this, lack of staff ‘territory’ that they could call their own and collective behaviour management of students. The teachers expressed the need for strong and supportive leadership and management from senior leaders during the transition years. Specific requests included time, resources and a consistent whole school behaviour management policy. Time related particularly to collaborative teacher planning, which the staff believed would be crucial in making the cross-curricular enquiry-based projects a success.

After the week there was a strong element of positivity running through discussions between teachers and senior leaders, in terms of facilitating enquiry-based learning and the teachers’ impressions of the student experience and student engagement. They also applauded the flexibility the structure provided and acknowledged that students were far more able to work in ways that suited them. Woolner et al. (2014) concluded that while there were still concerns that there was a risk of people perceiving that the children had not learnt as much as they would have done in traditional lessons, they valued the ‘deep learning’ that they felt was going on. The senior leaders noted the power shift that had occurred with the traditional roles of teacher and pupil challenged as students became ‘enabled’ to be the expert in their own learning and the teacher took on the role of co-investigator or facilitator of learning. This enablement correlates seamlessly with the themes of student ‘agency’ (Osborne 2013), personal coaching (Eiken, 2011) and student-centred learning (Dovey & Fisher, 2014).

Teachers’ initial concerns about planning time remained valid and most significant after the weeks experiment, as well as the challenges of working in an inter-disciplinary way. The flexibility of space in the creation and reconfiguration of groups was viewed positively; although noise remained an issue for some staff, they believed this could be addressed in the new building with the design of ‘sound booths’. However, the complexity of change to an MLE was highlighted in this study with fragmentation between senior leaders who were looking for teachers to engage with and practise new approaches and staff who looked to senior leaders for space and collaborative planning time.

Woolner et al. (2014) found that senior leaders “did not seem to have made their interpretation and reasoning [for the change to a MLE] clear to the rest of the staff” and in the two years subsequent to this research taking place, external forces of inspection have identified the open spaces of the new school contributing to its problems and the likelihood of its return from these and to “draw back from the pedagogical and cultural change previously envisaged” (pp. 160-161).

A change to MLE is an organisational change, a change in teaching and learning, and arguably, a change in culture. It is difficult to assert if a cultural change can be made directly or if it will emerge as a result of the other changes. However Bolman and Deal (2008) stress the importance of contexts in relation to managing change. These authors state that “organisational change is a complex systematic undertaking”(p. 378). Crucial to understanding and managing change is the ability to understand the four different and overlapping frames: structural, human resource, political and symbolic (Bolman & Deal, 2008). Kotter’s (1996) well known eight stages of change can be used as a framework, with each of the four lenses (Bolman & Deal, 2008) offering a different insight about what is important in managing the change effectively. What is apparent is that a change as significant as this requires an intimate understanding of the culture of the school and the wider school community.

Summary

Despite this major change for New Zealand schools, I have so far located very little research into the rationale and perceived benefits, or otherwise, of the introduction of MLEs in the New Zealand context. While there is a recognised link between MLEs and changed pedagogy, apparent in the Pedagogy-Space-Technology framework (Radcliffe et al., 2008), there is little evidence to suggest that there is a direct correlation between the two. Changing to a MLE does not provide surety of the adoption of changed teaching practices. This is supported by Osborne (M. Osborne, personal communication, 19th May, 2014), who comments that “there are certainly schools that have implemented MLEs and seen the achievement go up, but it is also possible to go into a beautiful MLE and teach in a really traditional way using pedagogies that are not supported by research”. Woolner et al. (2012) also consider the relationship between the setting and educational activities and while they conclude that “physical space has been found to entrench practice, making it harder to reflect and make changes [...] changes made to the physical environment may not lead to changes in teaching or learning” (p. 45). Good practice is likely to occur where there has been consultation, a sense of ownership, professional development, and openness to new practices and flexibility. I have a desire to make this research practical and constructive for schools, and therefore the focus will be on Senior Leaders’ and teachers’ voices to enable me to explore elements of good practice in contexts where schools are operating as MLEs.

Despite the move towards them by the New Zealand government, the literature review reveals gaps in the current research about Modern Learning Environments or MLE's, particularly pertaining to a New Zealand setting. This makes the following research questions highly relevant:

1. What comprises a 'Modern Learning Environment' in the New Zealand 21st century secondary school context?
2. What elements of 'Modern Learning Environments' are being implemented?
3. What changes in pedagogy are being practiced in 'Modern Learning Environment' schools as a result of the change to a 'Modern Learning Environment'?
4. What challenges have leaders and teachers faced in the move to a 'Modern Learning Environment'?

Chapter Three: Methodology

Introduction

This chapter begins with an overview of the research methodology used in this study. It presents the rationale for the adoption of a subjectivist epistemological position and consequently a qualitative approach to the methodology, research design and data collection. An explanation of the research design is then provided, the three participating schools are introduced and the study sample is examined.

The next section outlines the data collection and data analysis methods. This is done in two sub-sections which are: (i) the semi-structured interviews; and (ii) the focus groups. Finally, a discussion of the validity, reliability and ethical considerations relevant to this study conclude the chapter.

Research Methodology

The term 'epistemology' refers to what counts as legitimate knowledge or how we know what we know. Bryman (2012) asserts that "an epistemological issue concerns the question of what is (or should be) regarded as acceptable knowledge in a discipline" (p. 6). It is central to research and it determines that different cultures often make different epistemological assumptions (Davidson & Tolich, 2003). The purpose of this study was to examine the shift towards 'Modern Learning Environments' (MLEs) in three New Zealand secondary schools and the changes in pedagogy that are occurring in some schools as a result of this change. Vogt (2012) highlights the link between epistemology and methodology (Vogt, Gardner, & Haeffele, 2012). My own ontological position and epistemological beliefs have determined my methodology.

I have been involved in education for over thirty years and believe that the relationship between the teacher and student is the most influential factor in teaching. It is my epistemological belief that unless this relationship is based on mutual trust and respect, the change of context to a MLE will not improve student achievement. In contrast, openness to pedagogical change in a flexible learning space, alongside a genuine interest in creating personalised learning in a mutually trusting relationship, could offer the most potential in a MLE. I am primarily interested in what comprises a modern learning environment and the potential of such environments for raising students' achievement (as evident in research questions 1 and 2). However I am also interested in the pedagogical change and wider adaptations that schools have made to ensure a MLE is more than just a flexible space (as evident in question 3). My methodology favoured "the subjectivist (or anti-positivist) approach [...] view[ing] the social world as soft, personal and humanly created" (Cohen, Manion, & Morrison, 2007, p. 8). This methodology was most appropriate as I was dealing with people and relationships, where people were likely to have individual experiences and assign their

own multiple meanings to these experiences. Because I was collecting perceptions and opinions in a social, humanistic and interpretive way, my research adopted a qualitative approach.

The change to personalised learning in an MLE is a complex one. It can involve wider adaptation to programmes and timetables. It involves stresses, emotions, actions, values and interpersonal relationships. As such it needed to be studied from an interpretive perspective, and the collection of qualitative data was appropriate to describe and understand the process. Because of the differing perspectives and values held by individuals, a subjective epistemological position led me to adopt the interpretive paradigm as the most appropriate because it is characterised by a concern for the individual. (Cohen et al., 2007). Furthermore, Creswell (2002) surmises that a qualitative approach “is one in which the inquirer often makes knowledge claims based primarily on their constructivist perspectives” (p. 18). Therefore there are multiple meanings of individual experiences. Interpretive researchers begin with individuals and set out to understand their interpretations of the world around them. An interpretive paradigm not only investigates the different parts to the environment, it also focuses on how these parts interact and connect as a whole. Theory emerges as sets of meanings which yield insight and understanding of people’s behaviour (Cohen et al., 2007). Due to the humanistic and diverse set of meanings and understandings likely in this phenomenon, the two methods that I selected to use to collect data were interviews and focus groups.

The aim of this research was to critique, from multiple perspectives, the shift to MLEs in three New Zealand secondary schools. Therefore it was most appropriate to position this research in the interpretive paradigm. This allowed the different perspectives and experiences of both senior leaders and teachers to be studied in-depth. This paradigm is appropriate as each experience is subjective with different meanings interpreted and understood from the subject’s perspective. By using the interpretive perspective it is possible to “understand, explain and demystify social reality through the eye of different participants” (Cohen et al., 2007, p. 19). Qualitative methodology is an appropriate analytical approach as it is connected to the meaning that people attribute to their experiences in the social world. It is the studied use and collection of data that describe routine and problematic moments and meaning in individuals’ lives (Cohen et al., 2007; Davidson & Tolich, 2003). Accordingly, qualitative research using a range of research methods will lead me to a better understanding of the success factors and challenges faced by staff that are part of schools operating as MLEs.

On the other hand, the limitations of qualitative research are that this work has been termed ‘unscientific’ by positivists who “further allege that the so-called new experimental qualitative researchers write fiction, not science”, and that “these researchers have no way of verifying their

truth statements” (Denzin & Lincoln, 2005, p. 8). Furthermore the change to MLEs is a complex one and the differences between what is espoused and what is practiced can be problematic as it may lead to inconsistencies. However, Denzin and Lincoln (2005) counteract this view stating that “the province of qualitative research, accordingly, is the world of lived experience, for this is where individual belief and action intersect with culture” (p. 8). The experiences of senior leaders and staff who work in a MLE and are part of the iterative process of managing change in pedagogy and school-wide systemic change vary greatly. Hence the benefits and opportunities presented by using qualitative research far offset the drawbacks.

Research Design

Qualitative research begins with a problem or situation that requires change; in this instance it is the gap in the research pertinent to New Zealand modern learning environments and their educational corollaries, despite the move towards them by the Ministry of Education as they are touted as the ‘way forward’. Qualitative research has three roles: exploring (discovering if the problem exists), describing (describing the phenomenon in detail), and explaining (the cause and effect of the problem). It is a disciplined attempt to better describe and explain the problem. As I sought to explore, describe and explain the phenomenon and gain the perspectives of the people involved, a qualitative study was the most appropriate approach. To increase the validity of this research I employed two different research tools and techniques across three different secondary schools. To avoid bias I asked for volunteers and stated that I would draw participants’ names from a hat in the case of too many potential participants. I had no association with any of the schools and the participants were unknown to me. To further support the validity of the study two different groups of people were involved, senior leaders and teachers.

Sampling Selection

The schools that were selected for the study were randomly chosen based on the following criteria: secondary schools that operate as a MLE; an ERO report that indicates that the school is operating in an innovative way; and locality (in proximity to each other). The three selected schools are all secondary schools and in the same geographical area and are large urban schools. The three selected schools were invited to participate in the research study (Appendices A and B) and are listed overleaf:

Table 3. 1 School Sample

	Roll (2014)	Decile	Composition	Years opened as a MLE
School A	500-1000	➤5	Co-educational	➤5
School B	⋈250	➤5	Co-educational	⋈5
School C	➤1000	⋈5	Co-educational	➤10

Data Collection and Analysis

For this research study I collected and analysed data from three New Zealand secondary schools that operate as MLEs. I completed semi-structured interviews and focus groups at each school. I sought to gather sufficient data while maintaining a manageable sample size. At School A I conducted two interviews and one focus group of five people; at School B I conducted three interviews and one focus group of two people; at School C I conducted two interviews and one focus group of five people. Participants filled out a consent form prior to the interview (Appendix C). The process for selecting the interview and focus group participants is outlined in the final section.

Semi-structured Interviews

The interviews were of senior leaders who work in the secondary schools and have managed the adaption to MLEs. I chose to interview two senior leaders at each of the three schools as these leaders at this level are acknowledged in the literature as being key people in managing school change (Campbell et al., 2013). One school selected a third senior leader to be interviewed. Furthermore, this group of people would undoubtedly have had to consider the environmental and educational implications of a MLE. They may have stimulated a change in the way teachers deliver their programmes and provided guidance and professional development to assist staff. There was the possibility that these leaders may have instigated some school-wide adaptations to provide for more flexibility of timetabling, efficient use of technology within spaces, or planning to allow for the collaborative sharing of ideas and thematic approaches. School leaders may have encouraged flexible spaces to be used in a cross-curricula fashion or through a multi-level approach.

Senior leaders are the ‘face’ of the school and are likely to have promoted the pedagogical change that may have occurred with the introduction of MLEs in their schools. They will also have had opportunities to deal with the challenges and potential of such a system with staff, students and the wider community. Because these school leaders would have a variety of in-depth views, it seemed appropriate to use a series of

semi-structured interviews to provide the data that informed my research. Hinds (2000) suggests interviews should be used when in-depth information is required. Moreover, semi-structured interviews lend themselves to more discussion as they have a set of key questions that are followed in a more open-ended manner (Mutch, 2005).

This type of interview, as a two-person conversation, gave a more in-depth understanding of the topic or issues from the participant's perspective. This stance is supported by Bell (2010), who considers that semi-structured interviews provide the interviewer with flexibility as they can query answers for clarification, and examine participants' intentions and beliefs. Moreover, Bryman (2012) also poses that questions not included in the schedule may be worthy of further investigation. Subsequently, I prepared a framework of questions in advance, as well as some broader topics, starters, prompts, probes and follow-up questions (Appendix D). The questions were both open and closed, allowing me to retain control over the direction of the interview, whilst still allowing some flexibility for question adaption. While *control* is a word with negative connotations, Gillham (2000) believes control in the sense of *management* is fundamental to skilled interviewing. Moreover, Gillham reminds us that "an interview is an interview and you don't pretend it is anything else; you can deal with any misconceptions by explaining well beforehand, and in the process of getting agreement, what the interview is about" (p. 7).

I sent an email to staff, via each school Principal's Personal Assistant or Deputy Principal, asking for interested participants to confirm expressions of interest. This request to participate clearly specified the aims of the research and asked staff to reply to me if they were interested in participating, indicating their role in the school (senior leader or teacher). From this feedback I was able to determine the two senior leaders who I would interview from each school (although one school gave me the opportunity to interview three). The requests also made it clear that the responses would be digitally recorded and that the data and the identities of participants and their schools would be kept confidential. Furthermore, the respondents were given the opportunity to check their own transcript and withdraw or modify their responses over a ten day period after the receipt of their transcript. This was stipulated on the consent form that participants were asked to complete (Appendix C). There was also an opportunity given, prior to the interviews, for any questions about the process to be emailed to me.

Prior to the interviews I piloted the questions with staff at a primary school that operates as a MLE to ensure that the questions were succinct and followed a logical order (Hinds, 2000). This also allowed me to check the validity of the questions in attaining useful data. The feedback I received endorsed the order and validity of my questions, although some were not relevant in the primary school setting. I also piloted the use of the digital recorder in the primary setting so I was familiar with using it, and I also took notes during the interviews. The use of a digital recording device ensured accuracy of transcription (Bryman, 2012) and gave me “the ability to listen several times in order to identify categories [and] to code, summarise and to note comments which are of particular interest without having to try to write them down during the course of the interview” (Bell, 2010, p. 167).

The potential for researcher subjectivity and bias (Bell, 2010; Cohen et al., 2007) was limited by ensuring the interviews were recorded and transcribed accurately, and that participants checked and had ownership over their data. Individually interviewing seven senior leaders from three different secondary schools was a valid research approach, as senior leaders are usually responsible for managing school-wide change and pedagogy in their school. Bryman (2012) refers to the use of purposive sampling as using participants that have a direct relationship with the research questions. Senior leaders were more inclined to have a school-wide perspective on the operation of MLEs in their school; therefore their views were significant. Individual semi-structured interviews gave the opportunity for flexibility and the scope for in-depth discussions to take place (Merriam, 1998). Consistency was achieved through the use of the same eleven major questions. These were used in conjunction with sub-questions and possible follow-up questions, dependent on the detail and length of the respondent’s answers.

The interviews were conducted in a conducive environment - quiet, comfortable and free from interruptions (Mutch, 2005). Throughout the interviews I endeavoured to be respectful, sensitive and non-judgemental towards the interviewees, and worked to establish a relationship with them (Bryman, 2012; Merriam, 1998; Mutch, 2005). I reminded them of the purpose of the research, reassured them of the confidentiality of their contributions and explained about the use of the digital recorder (Mutch, 2005). The interview questions focused on the changes that the school had undertaken in conjunction with operating as a MLE. The questions considered both changes to pedagogy as well as organisational adaptations that had occurred. Senior leaders were

also asked about the potential and challenges of MLEs as well as the provision of professional development and the management of technology in these spaces. In practise, the semi-structured interviews were most suitable for the purpose, as they focussed on the aims of the research project, whilst allowing the flexibility for participants to describe their own experiences as leaders in a secondary school operating as a MLE. The two semi-structured interviews were used in conjunction with a focus group from each school to triangulate the data and consequently strengthen the reliability and validity of the findings (Cohen et al., 2007).

Focus groups

A focus group interview is defined by Fontana and Frey (2005) as “a qualitative data-gathering technique that relies on the systematic questioning of several individuals simultaneously in a formal or informal setting” (p. 703). Focus groups have been further defined as “a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment” (Krueger, 1994, p. 6). They have been described as a useful tool for busy practitioners by Mutch (2005) because “they combine the best of surveys (a broader sample) and interviews (an in-depth response)” (p. 128). In summary, Bryman (2012) deduces that a focus group is essentially a type of group interview.

Focus groups were appropriate in this research, as participants had the opportunity to construct joint meanings in relation to their experiences in a MLE that were relevant to their context. As a researcher I was primarily interested in how individuals viewed issues concerning MLEs and discussed things as members of a staff group (Bryman, 2012). This method of data-collection allowed access to the views of several people at once, whilst the group dynamics and resulting synergy produced data that may not have been forthcoming in an interview situation. It allowed for an understanding about *why* people felt the way they did as the members of the focus group were given the opportunity to probe each other’s reasons for holding a certain point of view (Appendix D). After listening to each other, participants were able to agree, disagree or modify their responses. They were able to challenge each other and, through this process of thinking, arguing or defending their point of view, they revealed a more accurate account of what they thought and believed as they justified their thoughts to other focus group members. The interaction and discussion also gave me the opportunity to

reflect on the process that occurs as individuals construct meanings around ideas (Bryman, 2012).

Because the focus group participants did not include senior leaders, there was less likely to be a power imbalance that could inhibit honest and open responses in a permissive, non-threatening environment (Krueger, 1994). Participants in the focus group were also more likely to raise an issue that they felt was important or significant. I could also take note of “not just what people say but *how* they say it , for example, the particular language that they employ” (Bryman, 2012, p. 476). This is why I chose to use both a digital recorder as well as writing notes during the focus group interviews. The focus groups consisted of 4-6 teachers who work in the MLE but were not part of the senior leadership team in their school. I was hopeful that their interaction and shared understanding would inform my research project. Because certain individuals can dominate the focus group discussion, it was important that I was able to facilitate a discussion as well as manage a group to ensure that each person had the opportunity to express their point of view freely.

As with the interviews, I sent an email to staff, via each school Principal’s Personal Assistant or Deputy Principal, asking for interested participants to confirm expressions of interest. The request clearly specified the aims of the research and asked staff to reply if they were interested in participating, indicating their role in the school (senior leader or teacher). From this feedback I was able to determine the 4-6 focus group members from each of the three schools. I had asked for volunteers and stated that names would be drawn out of a hat in the case of too many potential participants. This was not necessary. The request also made it clear that the responses would be digitally recorded and that the data and the identities of the participants and their schools would be kept confidential. Furthermore, the respondents were given the opportunity to check a summary of the focus group discussions and withdraw or modify their responses over a ten day period, after the receipt of their summary. This was stipulated on the consent form that participants were asked to complete (Appendix C). There was also an opportunity given, prior to the focus group, for any questions about the process to be emailed to me.

Much of the success of focus groups is dependent on the quality of questions asked. Indeed, Krueger (1994) describes questions as the heart of any interview and states that while they “may appear to be spontaneous, they have been carefully selected and phrased in advance to elicit the maximum amount of information” (p. 53). Distinguishing between several different types of questions, Krueger claims they each serve a distinct purpose: there are opening, introductory, transition, key, and ending questions. He also cautions that “dichotomous questions and ‘why’ questions are to be avoided” (Krueger, 1994, p. 69). Both of these types of questions may elicit ambiguous responses, restricting clarity and not evoking the desired group discussion. I prepared a set of seven carefully selected questions that started with an opening and introductory question designed to set the scene and make the participants feel at ease. Key questions were centred on elements of good practice and change of pedagogy, as well as challenges for staff and students. Flexibility of the learning space and personalised learning for students were other underlying themes that reoccurred in the literature promoting the move to MLEs. By using open questions to elicit discussions I was interested to see if these were emergent themes. Finally I had prepared some ending questions to use if time permitted and if these had not already been answered in previous discussions.

The same personal traits that are important as an interviewer (being knowledgeable, organised, confident, clear, professional, open, sensitive and flexible) are also vital as the focus group facilitator. Again, the importance of being personable, well organised and paying attention to the setting up of the environment is fundamental to being a successful facilitator. Being an active listener with the ability to paraphrase is also likely to elicit more discussion. One difference between the two methods is that because this was a ‘discussion’ rather than a semi-structured interview, the ability to ‘facilitate’ a discussion as well as ‘manage’ a group is crucial to ensure one person is not dominant to the detriment of the contributions of other focus group members (Fontana & Frey, 2005). To record the data from the focus group I prepared a group schedule or pro forma where I could record information about the focus group and participants, and take notes against each question. I also recorded the discussion on an electronic device (with the participants’ permission).

Data Analysis

To analyse the data from both the semi-structured interviews and the focus groups I carefully transcribed the digital recordings, checking and rechecking to ensure accuracy. While transcribing the data was a time consuming task, it was beneficial in that it allowed me to become very familiar with the data and enabled me to identify key themes and recognise similarities and differences between the different participants' responses. Pseudonyms were used to protect the anonymity of the speakers. The data was typed and printed in a landscape form so that I could add additional informal information or field notes (Mutch, 2005). A transcript was sent to the interview participants and a summary of the discussions was sent to the focus group participants to check. These people were aware that they had a ten day period in which to respond to me should they choose to modify their data or withdraw their involvement after receipt of their transcripts.

Analysing text qualitatively uses a thematic approach called inductive analysis. Inductive analysis is based on the data and the themes that emerge from the data itself (Bryman, 2012; Lofland, Snow, Anderson, & Lofland, 2006). Thematic analysis involves identifying salient themes, recurring ideas or language and patterns of belief that link people and settings together. It was important to approach the findings with an open mind and let the text 'speak for itself' (Mutch, 2005). Using an eight step process proposed by Mutch (2005) I initially browsed the information collected, skim reading with an open mind. It was important not to read with only preconceived ideas based on the literature I had read previously and the themes I was expecting to see, and to notice other aspects raised in the data. These were highlighted and coded as themes in the margin, comprising the first three steps in the determination of my categories.

Coding typically involves writing margin notes on the themes and then gradually refining these notes into identified themes (Bryman, 2012). Coding is a part of analysis that allowed me to synthesise the data and consider the meaning of it. Step four was to look for patterns emerging from the coding and to group and label these, comparing and noting links in the form of similarities and differences. This enabled me to aggregate and group the ideas and to further develop themes and categories; step five of the process. Some possible commonly mentioned criticisms of coding are the decontextualising that can occur and the fragmentation of data, resulting in the narrative flow of the participants voice being lost (Bryman, 2012). It was valid to keep these criticisms in mind when coding and checking the validity of the codes.

Step six was to check for consistency and resonance, checking that the themes seemed valid and consistent. It was during this process that I reflected on the themes that had been prevalent from other research in the area of MLEs and the correlation between those and the data presented.

Interpreting the significance of the coded material and the connections between codes also enabled me to reflect on the importance of the findings in light of my research aims, research questions and research literature on MLEs. I was also able to 'order' my themes, determining whether some were stronger than others and to develop 'sub-categories'. Selecting examples and quotes to exemplify the identified themes was the next step proposed by Mutch (2005). Finally a summary of my findings was prepared and can be found in Chapter 4. Chapter 5 of this document reflects on, interprets and theorises the data (Bryman, 2012). It suggests possible theoretical explanations and significance of the ideas and themes, raises relevant issues and implications, and suggests further research in the area of the move to MLEs in New Zealand secondary schools.

Reliability and validity

Reliability is concerned with consistency; producing similar results under constant conditions or "the likelihood of the same results being obtained if the procedures were repeated" (Hinds, 2000, p. 42). It might also be known as "credibility, neutrality, confirmability or dependability" (Cohen et al., 2007, p. 148). In qualitative research reliability can be regarded as a match between what is occurring in the real world in the context of the research and what the researcher is recording as data. Qualitative researchers often employ the concept of 'trustworthiness' of data, as this better encapsulates the particular characteristics of qualitative data (Davidson & Tolich, 2003). The subjectivist approach supposes that people, in this case teachers and senior leaders, perceive the world in different ways and construct their own social reality. Because the change to a MLE is complex and contextual, and involves human dynamics, emotions and perspectives, the reality is multi-layered and different versions of reality coexist. The trustworthiness of the data was checked through the provision of the transcript and summaries so that respondents could validate their responses. Respondent validation was to seek corroboration or otherwise of the account of the focus group or interviews that I had transcribed.

Reliability is related to measures. Three important reliability indicators are stability (interview/focus group results would be similar if re-administered), internal reliability (consistency of scale and indicators), and inter-observer consistency (deciding categories for coding in data analysis). This research aims to provide a valid description of what has been said in either the semi-structured interview or focus group in these specific situations, rather than generalising the findings to the wider population (a more scientific, quantitative approach). Accurate and careful recording, transcribing and reporting of data was essential to ensure internal reliability.

Validity, on the other hand, is more concerned with whether the questions and data collection actually measure the concept being researched. Validity according to Hinds (2000) "relates broadly

to the extent to which the measure achieves its aim, i.e. the extent to which an instrument measures what it claims to measure, or tests what it is intended to test” (p. 42). Validity is based on both authenticity and trustworthiness of both the data and its interpretation. Bias can act as a cause of invalidity of interviews, with the sources being “the characteristics of the interviewer, the characteristics of the respondent, and the substantive content of the questions” (Cohen et al., 2007, p. 150). Attempting to minimise the amount of bias in my interviews and focus groups was achieved by establishing a positive rapport and trust with participants, carefully wording questions and providing positive affirmation for all ideas. Through the random selection of participants I endeavoured to achieve non-biased sampling. Open (non-leading) questions were used in both the interviews and focus groups.

It was also important that the focus groups were well facilitated to ensure every participant had an opportunity to speak and one person did not dominate the conversation. Keeping the staff separate from senior leaders was an attempt to remove any possible power dynamics that could inhibit or cause participants to modify their responses. Validity was further strengthened through consistent coding of responses and open-minded data interpretation. Piloting or pre-testing my interview questions on a group of primary school teachers not involved in the actual thesis data collection was an important step in ensuring the strength or rigour of the research process. While the primary setting did operate as a MLE so I was able to test the validity of my questions, I also found some questions were more appropriate for a secondary setting.

Triangulation

Another way to strengthen the credibility of the research process is through triangulation. This refers to “using different research methods to hone in on an event from two or three different angles” (Davidson & Tolich, 2003, p. 34) or “the use of two or more methods of data collection in the study of some aspect of human behaviour” (Cohen et al., 2007, p. 141). This use of multiple methods or multiple sources of information (known as methodological triangulation) to generate data as a validation procedure ensures it ‘stands up’ or is ‘fit for purpose’. Multiple perspective triangulation involves looking at phenomenon from a variety of levels or perspectives. Gaining the perspectives of both the Senior Leadership Team through semi-structured interviews and other staff through focus groups, provided two sets of perspectives on the modern learning environments. This multiple perspective triangulation involves looking at phenomenon from a variety of levels or perspectives so that the findings can be cross-checked. I hoped to compare the different groups of data over three secondary schools. Essentially, if different sources of data are saying the same things, then the social researcher can have greater confidence that the findings are valid (Davidson & Tolich, 2003). While the results may not be generalisable to other locations, triangulation may

ensure that the findings accurately reflect the opinion of the people in the study, thus strengthening its credibility.

Ethical issues

A researcher has a responsibility to conduct all research in an ethical manner. Mutch (2005) defines ethics as “an underlying sense of morals or a particular code of practice” (p.218). An ethic is a moral principle that governs the way that we behave. To act morally is to act with honesty, integrity and openness. The focus of educational research is the people in the study and the need to protect them from any possible harm throughout the research process. These people include both the participants and the researcher; both are vulnerable. This vulnerability might include physical, mental, emotional or financial harm to individuals or as groups operating in society. It is ultimately essential that a researcher remembers that the fundamental issue in ethics is how we should treat others (Wilkinson, 2001). This includes the responsibility to do no harm to the participants.

The research had no harm anticipated and no intention or reason for subjecting respondents to deception. There were no anticipated conflicts of interest because I had not been involved with the research schools previously and did not know any of the participants. Gaining approval after submission to the Unitec Research Ethics Committee (UREC) was a necessary step to protect the participants, myself as the researcher, and Unitec. Researchers behaving in ethically unacceptable ways might rebound on and reflect badly on institutions (Bryman, 2012). UREC highlights the importance of seven ethics principles. These are: informed and voluntary consent, respect for rights and confidentiality and preservation of anonymity, minimisation of harm, cultural and social sensitivity, limitation of deception, respect for intellectual and cultural property ownership, avoidance of conflict of interest and research design adequacy.

To address the ethical issues during my research work I initially sought to develop a positive relationship with the schools through communication such as phone calls and emails, ensuring that any communication was open, honest, timely and friendly. I sent an email to each principal stating the proposed dates, purpose and aims of the study, methods of data gathering and requesting suitable times for my visits to the school. In this email, assurance of anonymity and confidentiality in regard to the names of the schools and the participants’ identities was given. I also requested permission for the PA to send an emailed letter to the staff asking for interest and requested a suitable environment to carry out the focus groups and interviews. I gained permission from the School Leadership Team to conduct the study via a formal letter. I also checked that the questions asked in my interviews and focus groups were sensitive and respectful, and designed to meet the objectives of the project. The interview questions were piloted at a primary setting.

Because the research focussed on how learning environments affect student achievement, and research highlights both Maori underachievement and the need to consider learning styles to improve this, the research may have impact on or be of relevance to Maori. This project was not specifically focussed on participation and/or outcomes for Maori participants. However the nature of MLEs and the impact they may have on Maori student achievement may have emerged as a theme as a result of the data collection. I ensured that the Treaty of Waitangi principles were followed when reporting on any specific Maori matters that arose, in ways that promoted and protected the interests of Maori. I sought advice from a Maori Unitec staff member regarding my proposal, research methodology and interview and focus group questions, to ensure these were appropriate, sensitive and met the objectives of the proposal.

Participants were informed fully in writing about the nature and purpose of the research and assured of clear protocols regarding confidentiality, anonymity and protection of personal information so under no circumstances could they be identified (Bell, 2010). They were assured that the data they provided would be kept confidential and securely stored, using password protection. Participants were asked to consent in writing to take part without duress or coercion to do so. Consent was voluntary and informed (Mutch, 2005; Wilkinson, 2001). There was provision for a random selection was to be made by drawing names out of a hat if there were too many participants, but this was not required. The consent form that focus group members signed asked them to keep confidential the data that other focus group members provided. In the case of the interviews, participants were assured that their identities and the data that they provided would be kept confidential and securely stored by me. Interview and focus group excerpts used in this thesis do not reveal the identity of the respondent or other people or organisations to whom they refer.

The consent forms specified that the focus groups and interviews would be electronically recorded, as well as some notes made. There was an opportunity given for participants to ask any questions prior to the interviews and focus groups. After the interviews and focus groups, participants were given the transcripts in a timely manner to check and verify, keeping in mind that I needed to be fully aware of and observe individuals' rights of privacy in the research, but in particular with respect to the electronic processing and dissemination of personal data (Bell, 2010). Participants were aware that they then had the opportunity over a ten day period to amend, clarify or withdraw any responses they had made. (Cohen et al., 2007). Finally I will act on promises to share the final thesis with both the teacher participants and the Senior Leadership Team members if they request this in the future.

Summary

The introduction of modern learning environments in New Zealand schools is seen by the New Zealand Government as a way forward. The Ministry of Education website states that “a number of schools, both new and old, have successfully implemented the modern learning environment (MLE) criteria to create 21st century learning environments for their students” (Ministry of Education, 2014a). There is also a commitment that this webpage will be updated on a regular basis in a bid to help inform and to inspire schools to remodel their schools. Despite this, there is a gap in the research pertinent to modern learning environments in the New Zealand school context. My aim was to explore what comprised a modern learning environment in the New Zealand 21st century context, what elements of modern learning environments were being implemented and what challenges did this implementation have for school leaders.

This chapter has described the methodology and research methods I have employed in this research project. I have provided justification for assuming a subjectivist epistemological position, together with the rationale for following an interpretive paradigm and a qualitative approach. The three participating schools and the sample size were then introduced. I have then explained the choice of semi-structured interviews and focus groups as data collection methods. I have justified the use of a general inductive data analysis approach based on emergent themes from the data. Finally I have described the conditions I applied to ensure the validity and reliability of the data and explained how I examined relevant ethical issues relating to the study. In the next chapter I will display the findings that this research methodology and data collection methods have provided.

Chapter Four: Findings

Introduction:

This chapter displays the findings from the interviews with senior leaders and focus groups in each of the three schools that comprised my research sites. There were eleven questions posed in each of the senior leaders' interviews. Each participant answered every question, some answering in more depth than others. There were seven core questions for each of the three focus groups and three extra questions were used if time permitted. All three focus groups managed to answer eight questions, with one answering nine and one all ten. Members of the focus groups were respectful and active participants.

I have, where possible, combined the results of all of the interviews in my analysis. Where the questions were more pertinent to a specific setting I have separated the findings into the three schools to display them. I have used pseudonyms to protect the participants' identities and the identity of the schools. I have endeavoured to present the findings of the interviews without bias or judgement.

Defining a MLE

Question One: In your opinion, what comprises, or makes up, a MLE? (Can you describe it?)

The aim of the first question was to establish a framework or definition for the term Modern Learning Environment or MLE. I was interested in determining what the concept of a MLE meant to the participants and, in particular, whether they reported either the physical implications (for example, architecture, furniture, classroom space) or pedagogical implications (for example, more personalised learning, greater differentiation of learning) of the change to a MLE, or both. Consequently my question was very open, asking them to describe what comprises, or makes up a MLE in their opinion. Table 4.1 overleaf shows the aggregated data from both the seven interviews and three focus groups in response to Question One.

The results indicated that greater personalisation of teaching and learning, increased flexibility of practice, changes to pedagogy, openness of environment and practice, blended technology and the varied use of space were each recounted by more than half of the participants as major factors or contributing elements that comprised a MLE. Collaboration between staff was identified by four participants, while cross-curricula connected learning and forming positive relationships were each identified by three of the participants. One or two participants also identified connections with the community, authentic or 'real' learning, student self-direction, modern structural design and modern and moveable furniture as a defining element when describing a MLE (see Table 4.1 overleaf).

Table 4.1: Characteristics of a MLE as Defined by Participants							
Schools	A		B		C		Total
Participants	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	(n=18)
Teaching and learning are personalised.	2	-	3	1	2	-	8
Teaching and learning approaches are flexible.	-	1	3	-	2	1	7
Teaching practice and the environment are open.	-	1	3	1	1	1	7
Pedagogies used match the MLE context.	2	1	2	1	-	1	7
Technology is used in a variety of blended ways.	1	-	2	1	1	-	5
Physical space is used in a variety of ways.	1	1	1	-	1	1	5
There is collaboration between teachers and learners.	-	1	2	1	-	-	4
Learning between subject areas is connected.	-	-	2	-	1	-	3
There are strong relationships formed.	-	-	1	1	-	1	3
Learners are able to self-direct.	-	-	1	1	-	-	2
There are strong community connections.	-	-	-	1	-	-	1
Learning is authentic.	-	-	-	1	-	-	1
Building design is modern.	-	1	-	-	-	-	1
Furniture is modern.	-	-	1	-	-	-	1
Total participant response							55

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group.

Personalisation of Teaching and Learning

Personalisation was identified as a key component of a MLE by eight of the ten participants. Personalisation is commonly understood to be an approach which allows students to progress and achieve in a way best suited to them as individual learners. In conjunction with this, participants used terms like 'student-centred', 'choice' and 'differentiation'. The recognition that MLEs are enablers for personalised learning, and that personalising learning is a move away from a dependence on teacher-centred modes of instruction, was highlighted in the responses to this question. For example respondents noted that:

Teachers are able to personalise through the use of different spaces for different purposes to cater for individual needs. Teachers are able to work more closely with small groups sitting alongside them. [School A; Rita- member of focus group]

The main thing for us is that everything we do here is student-centred not teacher convenience. Personalisation is one of the key principles which allows student choice of how they might learn these things. Also how we can best empower these kids as thinkers and with the metacognition to understand their own learning. [School B; Donna-senior leader]

Personalisation was closely aligned with a change of practice in a MLE. Participants perceived that the move towards personalisation clearly put students at the centre of their learning, able to articulate their preferred learning styles to teachers and co-construct their learning programme to best suit their learning needs and preferences. Aligned with this was an element of choice of both the mode of learning and the mode of 'evidencing' or presenting that learning. Participants believed that students in a personalised approach were more active participants in their learning, that is, how the results of the learning were shown. Personalisation was the most significant element identified by participants as an important component of a MLE.

Flexibility

Flexibility was also identified as a key component of a MLE by the participants, with seven participants recognising it as such. Flexibility may allow for the combination of large groups of students and several teachers, the fluidity of larger spaces with personalised activities, differentiation and group work, the use of 'break out' spaces for small groups or individuals and the use of specific spaces to suit the intended purpose. It can also enable cross-curriculum teaching and multi-level teaching. These elements were apparent, to an extent, in all of the three schools I researched. Participants' comments on flexibility included:

It [MLE] is anywhere that can be seen as a flexible, collaborative space that can be easily transformed and moved around to meet different learning styles and different modes of teaching. [School B; Cathy-senior leader]

Flexibility for me is the key. And a flexibility that allows for learner-centred as opposed to the traditional idea of the teacher at the front with the white-board or whatever, dictating proceedings. [School C; Samuel-senior leader]

A MLE should be flexible in that learners can use space for whatever they want or need to learn. So I don't think that they should only do Maths in a Maths room. [School C; Kat-senior leader]

Openness

Another aspect that was identified as a key component of a MLE was that of 'openness'. In this context the term was used by the participants to describe both openness of space as a 'Commons' or as a teaching space, and also openness of practice. Physical openness was described as large, airy, light spaces that could be used in a variety of ways. They were areas where there were no walls or, if there were walls, the walls and furniture could be moved or removed. They were often described as areas with no division or with glass divisions that encouraged visibility of practice.

Openness of practice was also referred to by participants in relation to a MLE. Participants recounted that they believed that the days of 'shutting the door and teaching within four walls' were now in the past. Teachers are now working in areas that they can no longer call 'their classroom'. Participants reflected that territorial rights to any particular area in the school have disappeared and staff (and in many cases students) are reportedly encouraged to negotiate the use of previously specialised areas (e.g. the gym, presentation room) to best meet the needs of the learners on any particular occasion. Participants communicated that subject areas are not kept in one area; in fact, a conscious effort is reportedly made to deconstruct departmentalisation of areas within the school. Furthermore, teachers teach different subjects in the same area and with different year levels. It is not unusual, participants reflected, to witness senior Chemistry students sitting right next to Year 11 History and Year 9 Social Studies students, all working in small groups or individually. Teachers are reportedly encouraged to be open and visible, and to observe, critique and be critiqued at all times. It was reflected by participants that this very visible 'openness' brings about a level of transparency of practice never before experienced by educators.

Pedagogy

A change in pedagogy was identified by seven participants as one of the most vital components in the composition of a MLE. One participant stressed that “for change to happen there needs to be more emphasis on the pedagogy” [School C; Jan-member of the focus group]. In fact it was noted by five respondents that it was possible to operate in a MLE in a very traditional way. Conversely, it was noted that a change in pedagogy was also possible, but more difficult, in the ‘silo’ of a traditional classroom. The space offered by a MLE was viewed by participants as an important enabler for the change to more learner-centred and personalised practices. New physical structures alone would not change practice. This is a view supported by one participant who stated “It is about the pedagogy; it is more than just about the buildings and physical fixtures” [School C; Jan-member of the focus group]. Participants believed that a pedagogically significant shift was fundamental to sustaining change to student-centred learning. The link between pedagogy and space was reinforced by several participants. In describing an MLE one Senior Leader stated:

... that there is some modern learning going on in the space. The pedagogy has to change, and the spaces are a fantastic catalyst for that, and probably enable the speeding up of that process. [School B; Donna-senior leader]

The distinction between the change of pedagogy and the physical structural change was highlighted in a clarification question by one Senior Leader:

Do you mean space or practice? The buildings and ICT can often be a smoke-screen for a MLE. To me a MLE is any environment that enables us to engage in future focussed practices in the classroom. [School B; Cathy-senior leader]

Other responses reinforced the role of pedagogy as the perceived integral element in determining a MLE:

It's not about the buildings, but the pedagogy. The buildings act as enablers for the pedagogy. [School B; Millie-member of focus group]

The building is just a shell. It is what goes on inside is what makes it a MLE. [School A; Sara-senior leader]

It is not the building; it is what is going on in it. It is the systems and the pedagogy and the learning everyone must do-we joke that everyone should be able to do it in a tent; it doesn't matter where you are. [School A; Shelly-senior leader]

Technology

Technology was mentioned as a contributing factor in a MLE by six of the participants. While this number initially seemed comparatively low, blended learning using technology of different sorts was reported as common-place at all three schools. It had reportedly become 'assumed practice' by staff and students, with students seamlessly integrating a variety of devices in a mixture of Bring Your Own Device (BYOD) and the provision of iPads and Chrome Books. Staff reported that they were using a mix of paperless and traditional pen and paper approaches.

There is the integration of technology; so blended learning. We have a very robust infrastructure to enable that. Wireless is everywhere and we were BYOD since Day 1. Every child has access. Being able to use Moodle and Google Docs etc. makes it more modern. For that to happen consistently is very powerful. [School B; Donna-senior leader]

It was also noted by one participant that technology was integrated and used in a purposeful way to assist learning support the school's pedagogy and vision:

It's not about using technology for the sake of technology; it's about using on-line spaces to share work easily and to collaborate. It also means that they can engage in their learning any-time, any-where and adds to that ability for them to be able to self-direct to a degree as well [School B; Cathy-senior leader].

Furthermore, some of the learning had moved away from the physical space completely:

I had a class last year which was a virtual class and didn't actually exist in any actual room or timetable. It was just via Google docs. That worked fine. [School C; Samuel-senior leader]

Technology had become such an integrated tool in the learning process that access to it seemed to be taken for granted by the staff.

Use of Space

Closely aligned with flexibility was the varied use of space, identified as a defining element of a MLE by half of the participants. The open plan, flexible spaces could be used to combine larger groups, to divide up small groups of students doing different activities or to allow students to work individually. Some spaces were divided into smaller 'caves' or 'fish bowls' to allow for quieter individualised work. In defining a MLE, one participant commented

To define it literally I would say it is any learning environment that tends to have open spaces, and tends to have a range of varying, flexible spaces that can be used in a number of ways and

tends not to define itself in learning areas in quite the same way. They are far more open and flexible in how you can use them and who can use them whilst retaining (in a Secondary environment) those specialist areas to support that learning. [School B; Cathy-senior leader]

Furthermore, the versatility of all spaces was reinforced by one senior leader who also emphasised the lack of 'waste space' in a MLE.

Collaboration Between Staff

Four participants identified collaboration between staff as a defining factor in a MLE. These participants noted the shared pedagogy that occurred when staff worked in a far more open plan environment, teaching with and alongside other staff members. This collaborative way of working was valued by these staff as an 'informal form of professional development' as staff learnt from each other. The cross-curricula collaboration of staff who worked alongside others from different specialist areas was also rated positively by these four participants. Collaboration between staff was felt to be further enhanced in all three schools by the sharing of planning spaces with staff from other departments. Staff felt this gave them a better understanding of students' progress in other subjects and allowed them to make cross-curricula connections. This was particularly apparent in School B where there were no departments operating, and where planning was co-constructed and offered as a module of choice to students. The perceived benefits of cross-curricula planning are expounded by a senior leader at this school:

We have done a lot of work with the teachers from only knowing their learning area to having a broader understanding of what everybody else does too and where the overlaps are, so that they can make connections explicit for the students. We can plan together as we know there are overlaps, so let's plan together so it will really make sense for the students. [School B-Donna-senior leader]

Furthermore, participants reported that the lack of 'territory' or owning of a particular space resulted in staff being compelled to work together and to negotiate the sharing of areas. One focus group participant commented on the support a staff member can gain from working together:

If there is a problem you are not isolated. You are not on your own dealing with two problem kids; there are other teachers around. [School A; Rita-member of focus group]

Other Factors

Three participants identified cross-curricula connections in learning as important elements in a MLE. One stated that while this is an 'ideal' situation, they admitted it is not one that they themselves follow at their school. While they had a MLE in some ways, they felt that staff had largely

'retrenched' into teaching their own subject separately. The other participants who identified this as important work at a school where cross-curricula teaching is actively practiced and students do not choose traditional subjects as such. Subjects are integrated into modules and students choose modules that best suit their needs, with the assistance of a 'Learning Coach'. It is the responsibility of the staff to ensure the curriculum is covered and concepts are offered in different ways to suit the learning styles of the students.

Relationships between staff, and between staff and students, was recognised as a defining factor in a MLE by three participants. In two of the three schools students are on a first name basis with the staff. One senior leader felt that this symbolised a power shift from traditional staff/student relationships in schools:

We also have a far more equal relationship between students and teachers. So in a way calling each other by our first names is sort of symbolic of that and students see themselves alongside teachers and visa-versa. [School B; Cathy-senior leader]

An increased level of student self-direction was identified by two participants as an important element in a MLE. Coupled with this was an increased element of choice:

We have incredibly student-centred practice. Students have a lot more choice than in a traditional school and ownership of their planning and organisation. And we do have elements of self-direction within the programme. It is very much guided self-direction. [School B; Cathy-senior leader]

An important part of self-direction as determined by one focus group was the ability that students had to be explicit about their learning and to co-construct their own learning programme:

There is co-construction. The students are able to discuss their learning and why they are learning it. [School B; Stuart-member of focus group]

Yes. I think the idea of a MLE is that learning is really explicit and purposeful and our students are able to articulate it and evidence it as well. [School B; Millie-member of focus group]

One participant recognised the importance of connections with the wider community as a defining element comprising a MLE. The school that this participant worked at was one where the students completed projects involving the community and this relationship was valued by this participant.

One participant highlighted authentic learning as a defining element in a MLE. This participant felt that student choice meant that students were able to learn in a more meaningful way for them.

It was noteworthy that only one participant recognised the modern design of the buildings as a defining element of a MLE. Perhaps that was 'taken for granted' by the other participants who stressed it is the pedagogy rather than the design that makes the environment 'modern'. It is also worthy to note that other elements such as openness and use of space incorporated the notion of a more 'modern design' with more glass, open spaces and flexibility.

One participant recognised modern furniture as a defining element comprising a MLE. This participant stressed this as a feature he had previously disregarded, but now valued as an important tool in the successful operation of a MLE:

The furnishings are also varied, flexible, easily moved, and all learners have access to different types of seating and tabling that's appropriate to their learning. They have to be attractive in terms of colour and finish. [School B; Manu-senior leader]

Question Two: What elements of a MLE are being implemented in the school? (Or does it tend to just operate as a large regular classroom?)

The aim of question two was to determine how many of the elements identified in question one participants believed were being implemented in their own schools. This was to ascertain if the new buildings and space of a MLE had necessitated change of pedagogy and practice, or if this varied between schools. Table 4.2 overleaf shows the aggregated data from both the seven interviews and three focus groups in response to Question Two.

Summary

Personalisation of teaching and learning remained the most important element with seven of the participants stating it was being implemented in their school. All of the focus groups stated it was a central part of their MLE. Use of space was put forward by five participants one of whom remarked:

All spaces are potential learning spaces and are available for learning to occur in, and that's what I see here. [School B; Manu-Senior Leader]

Flexibility and technology were reported by almost half of the participants as occurring in their schools. A changed pedagogy and collaboration were both reported by three participants in schools A and B, but not in school C. Connected learning, self-direction and relationships were highlighted by two participants each, the majority of responses (five of the six) being from school B. Less

common elements were community connections, authentic learning, modern design and furniture, each reported by one participant only. While these responses reflect the answer to question two, participants did, in other parts of the interview, stress the importance of some of these factors that they failed to mention in answering question two.

Table 4.2: Identified Implemented Elements

Schools	A		B		C		Total
Participants	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
Teaching and learning are personalised.	2	1	2	1	-	1	7
Teaching and learning approaches are flexible.	-	1	1	-	1	1	4
Teaching practice and environment are open.	-	-	-	1	1	-	2
Pedagogies used match the MLE context.	1	-	1	1	-	-	3
Technology is used in a variety of blended ways.	1	-	2	1	-	-	4
Physical space is used in a variety of ways.	1	-	1	-	2	1	5
There is collaboration between teachers and learners.	-	1	1	1	-	-	3
Learning between subject areas is connected.	-	-	1	-	1	-	2
There are strong relationships formed.	-	-	1	1	-	-	2
Learners are able to self-direct.	-	-	1	1	-	-	2
There are strong community connections.	-	-	-	-	1	-	1
Learning is authentic.	-	-	-	1	-	-	1
Building design is modern.	-	-	-	-	1	-	1
Furniture is modern.	-	-	-	-	1	-	1
Total participant response							38

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group.

Question Three: Can you tell me about the way the school has altered any structures because of the MLE? (For example are departments grouped together traditionally? Or are period lengths or timetables different to a 'traditional' school?)

This was a question asked only of the seven senior leaders I interviewed (not in the focus groups). Question three was designed to determine the influence of a MLE on the structural organisation of a school. I was interested in ascertaining whether the space and flexibility of a MLE was reflected in the organisational structures of the school. Personalisation, openness of practice and a change of pedagogy were all elements reflected in questions one and two. Question three was designed to determine if these things had generated changes in the way the school was organised. The results of question three are shown in Table 4.3 overleaf. The areas of structural change were identified by the senior leaders. Because this question is specific to each school the findings are reported on for each school separately.

School A

School A senior leaders reported that the school used 100 minute periods and did not have bells. They also had cross-curricula offices and cross-curricula teaching spaces, but 'sadly' did not do much cross-curricula teaching. Senior leadership offices were open plan. Professional development for staff was individualised and based on the 'teacher as inquiry' framework from the New Zealand Curriculum (Ministry of Education, 2007). One senior leader noted that there was a 'nice transparency' of teaching practice with a culture of observation. One day a week was used solely for project-based learning where many of the key competencies were explicitly taught. Restorative practices rather than punitive punishments were used and relationships were valued highly as 'the heart of everything we do' by one senior leader. Students called staff by their first names and senior leaders were the only ones who had conversations about uniform. The focus was on learning rather than on uniform regulations. There was reportedly a push for 'deep learning' in specialist subjects rather than 'cross pollination' between subjects in a 'once over lightly' approach.

Table 4.3: Structural Changes due to MLE			
SCHOOLS	A	B	C
90-100 minute periods.	Yes	Yes	Yes
Use of bells to indicate ends and start of periods.	No	No	No but music used twice daily
Students wear school uniform.	Yes but not focused on	Yes but not focused on	Yes
Students are on first name basis with teachers.	Yes	Yes	No
Cross-curricula offices are used.	Yes	Yes	Yes
Senior Leaders offices are open plan.	Yes	Yes	No
Cross-curricula planning is used.	No	Yes	No
Departments are grouped together.	No	No	No
There are cross-curricula teaching spaces.	Yes	Yes	Yes but rarely used
Cross-curricula teaching takes place.	No	Yes	No
Restorative practices are used.	Yes	Yes	Yes
Students complete project based work	Yes	Yes	Yes but not often
Teacher as Inquiry is used for P.D.	Yes	Yes	Yes
MLE pedagogy is practiced.	Yes	Yes	No
There is the existence of departments.	Yes	No	Yes
Personal mentoring of students occurs.	Yes	Yes	Yes

School B

School B senior leaders reported that the school used 90 minute periods and did not have bells. They also used varying modules to maximise what the space could offer and to enable collaborative teaching. There was cross-curricula teaching and the conscious decision to not have departments. The school's intention was reportedly to offer a differentiated programme that could work across the curriculum levels and address where the student's levels of understanding were, rather than be driven by the students' age. The structures reportedly came after the senior leaders had decided how they wanted the learning to look so that the structures supported the pedagogy rather than the

pedagogy fitting into the boxes of the structures. Restorative practices were used and again relationships were valued highly by the senior leaders. Students called staff by their first names and staff conversations with students were always about learning. Uniform regulations were not enforced by staff and all conversations with students were about learning.

School C

School C senior leaders reported that the school used 100 minute periods and did not use bells, although they did amplify loud 'up beat' music twice daily to signify the end of break times. Departments were not grouped together traditionally within the school. It was reported that less experienced teachers are often teaching next to experienced teachers so there was physical and personal support close by. There were still 2 or 3 teachers from the same department together and this reportedly assisted with the sense of collegiality, knowledge of what others were doing in their classrooms and with the access to technology. One senior leader reported that there were not many learning area meetings and they tended to be only held on a 'needs' basis. There were more often 'Whanau' meetings which involved a cross section of people from different departments. Whanau gatherings and celebrations were held in the open spaces of the Commons, and time and space was reportedly given to personalise these meetings. All tutor groups were in the same Whanau to strengthen the sense of 'community'. Project based work was completed across three days each term. Professional development was held each week with the students starting later in the day.

Question Four (Question Three for Focus Groups): What is different for staff who teach in a MLE? Can you tell me about the positives and negatives?

Question four was designed to determine how the change to a MLE had affected the staff. It is apparent that for real change to happen there needs to be a change of pedagogy led by a willingness and openness of the staff involved. This question was designed to determine the differences for staff who teach in a MLE and categorise their responses into positive and negative perceptions. I have further distinguished between those perceptions that affect teachers (t) and those that affect students (s) and labelled them accordingly in an attempt to determine if the perceptions were based on a student-centred mind set. Tables 4.4 and 4.5 overleaf show the aggregated data from both the seven interviews and three focus groups in response to Question Four.

Schools Participants	A		B		C		Total
	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
Teaching and learning are personalised. (t/s)	1	-	2	-	-	1	4
Choices are given to explore passions. (t/s)	-	-	1	-	-	-	1
Students' have the ability to articulate their own learning. (s)	-	-	1	-	-	-	1
Students are fully engaged, confident and happy. (s)	-	1	-	-	-	-	1
Learning is more transparent and visible. (t/s)	2	-	1	-	-	-	3
There are strong relationships formed. (t/s)	-	-	1	1	-	-	2
Students are collaborative learners. (s)	-	-	-	-	1	-	1
Teachers are excited and empowered. (t)	1	-	2	1	-	-	4
There is connected deep learning taking place. (t/s)	1	-	2	1	1	1	6
There is an authentic context for learning. (s)	-	-	1	-	-	-	1
Blended teaching occurs with the use of technology. (t/s)	-	-	1	1	-	1	3
There is multi-level teaching. (t/s)	-	-	-	-	1	-	1
There is a new physical environment. (t/s)	-	-	-	-	2	-	2
There are pedagogies that match the MLE context. (t)	1	-	1	-	-	1	3
Shared practices are used in a supportive environment. (t)	2	1	2	1	1	-	7
There is a variety of modern furniture. (s)	-	-	-	-	-	1	1
Cross-curricula offices are used and connections formed between subject teachers. (t)	-	1	1	-	-	1	3
The physical space is used in a variety of ways. (t/s)	1	-	-	-	2	1	4
It is less noisy. (t/s)	-	1	-	-	-	-	1
Total participant response							49

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group; t=teachers; s=students.

Schools Participants	A		B		C		Total
	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
None, would hate to 'go back.' (t)	-	-	1	-	-	1	2
Flexible walls mean staff can retrench into traditional practices. (t)	-	-	-	-	1	-	1
Being more visible is more demanding. (t)	1	-	1	-	1	-	3
There is increased noise and mess. (t/s)	-	1	-	-	-	1	2
Collaborative planning and teaching is challenging. (t/s)	-	-	1	1	-	-	2
'Unlearning' established pedagogy is challenging. (t)	-	-	1	-	1	-	2
An MLE can be challenging, exhausting and scary. (t)	1	-	2	-	1	-	4
Constantly reflecting can be challenging. (t)	-	-	2	1	-	-	3
Losing 'ownership' of spaces is difficult. (t)	1	-	-	-	-	-	1
Poor student behaviour is visible to other students. (t/s)	1	-	-	-	-	-	1
The furniture is not always durable. (s)	-	-	-	-	-	1	1
Total participant response							22

Note. n = number of participants, SL = Senior Leaders, FG = Focus Group, t=teachers, s=students.

Summary of Positives and Negatives

There were over twice as many positives than negative aspects reported. Staff seemed to particularly appreciate the sharing of ideas and practice that resulted in having cross-curricula office space and open teaching spaces with more visible practice. The supportive nature of teaching in a community and the relationships formed with other staff were reflected upon on several occasions. Also the staff's increased knowledge of the wider curriculum was a consistent theme in the positive feedback. Negative feedback tended to reflect the challenging nature of such a change of pedagogy and the difficulties in changing ingrained staff mind-set to being open, visible and collaborative. This could reportedly lead to staff 'retrenching' back into the familiarity of traditional pedagogy and practice, which was also viewed as a negative perception.

Question Five (Question Four for focus groups): What training or professional development do staff get, or need, to teach in a MLE?

Question five was centred on the change process for staff and the training or professional development involved in such a change. This question was designed to determine both what professional development staff had received and also what professional development staff felt they needed to operate successfully in a MLE. The perceived need for professional development is shown in Table 4.6 in the bolded figures.

Schools Participants	A		B		C		Total
	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
School vision.	1	-	2	1	-	1	5
Deconstructing N.Z Curriculum document.	-	-	2	1	1	-	4
Blended learning / I.T.	-	-	2	-	-	-	2
Personalisation/differentiation.	-	-	2	-	1	-	3
Teaching as Inquiry.	-	1	2	-	-	-	3
Assessment for learning.	-	-	2	-	1	-	3
Collaborative planning and teaching.	-	-	2	-	-	-	2
Change process.	-	-	1	1	1	-	3
How to use 90/100 minute periods.	-	-	-	-	2	-	2
Mentoring / learning coach.	1	-	2	-	1	-	4
'Experts' in working in a MLE are brought in.	-	-	1	-	-	-	1
Teachers learning from each other-sharing practice.	2	1	-	-	-	-	3
Induction days.	1	-	1	-	1	1	4
Big project coaching.	-	-	2	-	-	-	2
Restorative practise.	-	-	1	-	-	-	1
Total participant response							42

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group. **Bold**=perceived by participants as professional development needed

School A

School A felt they were part of a very supportive environment and staff were able to learn from each other due to the cross-curricula planning and teaching spaces. While they had induction days they did not hold 'this is how you teach in a MLE' professional development sessions. The focus group

discussed the open door policy and the learning by experimentation that is encouraged in School A. One member of the focus group, Kay remarked:

We are encouraged to observe others-both officially and just a 'walk through' and to be observed. That helps to improve our teaching across the board. [School A; Kay-Member of focus group]

There is also reportedly the careful placement of experienced teachers next to less experienced teachers for planning and teaching, and each staff member's office space is changed annually. Personal Inquiry was valued as a crucial part of professional development with many of these being around MLE related topics such as how to best use the space. The vision of the school is revisited annually with staff.

School B

School B had large amounts of professional development. As a new school, senior leaders were given a large period of time prior to the students starting to 'de-school', read professionally, visit other schools, discuss, share, question and build their vision together. The focus group also reported on the benefits of having the time to build their team and form relationships of honesty and trust. Reflection was also encouraged through the sharing of thinking through reflection journals, Twitter and Blogs. Since opening, a School B senior leader remarked that while initially professional development was quite prescribed as all staff needed to learn the same things, they have now changed that to address areas that arise:

We have now moved to be more responsive and not planning every one of those Fridays but having them available for things that emerge e.g. around new assessment. [School B; Manu-School Leader]

Planning was also underway for future professional development:

Next year we are thinking of having multiple age groups in our modules and some of them needing different qualification pathways. We really have to develop those skills. [School B; Manu- School Leader]

School C

Many of the results included in Figure 4.5 show not what professional development School C participants do receive, but what participants felt they needed. While School C participants indicated that they had very little professional development when they started at the school, they recognised areas where they felt staff could benefit from it:

The teachers that come in here get no P.D. We have a two day induction course like most schools, but I would say they don't get enough grounding in the 100 minute lesson, the MLE, flexibility and student-centred learning. [School C; Samuel-Senior Leader]

This was a view supported by another senior leader at the same school who pointed out the importance of having good NZC knowledge, teachers being able to see beyond their specialist subject, using the 100 minutes effectively, using data and being able to personalise programmes. These were all areas she felt could be addressed through a professional development programme. Furthermore, the focus group recognised that as their school had grown and adopted different initiatives, the opportunities to revisit pedagogy and vision had declined. They also stated that while some learning areas were good at providing professional development for their staff, there was an inconsistency across the school. One teacher remarked on her change to a MLE:

I was thrown in at the deep end. Being an experienced teacher there was just an expectation that you would be able to adapt. [School C; Astrid-focus group member]

One senior leader reported that the school did a lot of observations and '4 minute walk-throughs' and used the skill within the staff, rather than bring outsiders in to provide professional development.

Question Six (Question five for focus groups): What things do you see happening with students as learners in a MLE?

Question six focussed on the students and asked participants for their perceptions of them as learners in a MLE. I found that some factors (e.g. personalisation of learning) were not given as answers by many participants but had been mentioned elsewhere in the interviews.

The combined results are shown in Table 4.7 overleaf.

Schools Participants	A		B		C		Total
	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
Teaching and learning are personalised.	-	-	-	1	1	-	2
Choices are given to explore passions.	-	-	-	1	1	-	2
Learners have ownership of their own learning.	2	1	1	1	1	-	6
Students have the ability to articulate their own learning.	2	1	2	2	-	-	7
Students are fully engaged, confident and happy.	-	-	2	1	-	1	4
Learning is more transparent and visible.	-	-	-	-	-	1	1
There are strong relationships are formed.	1	1	1	-	-	-	3
Students are collaborative learners.	2	-	1	-	-	-	3
Teachers are excited and empowered.	-	-	1	-	-	-	1
There is connected, deep learning taking place	-	-	2	-	-	-	2
Those students lacking adequate organisational skills are failing.	-	-	-	-	1	-	1
Blended learning occurs with the use of technology.	1	-	-	-	-	-	1
Total participant response							33

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group.

Summary

Students' ownership of and ability to articulate one's own learning was identified as important by six and seven participants respectively. Some related comments were:

In a MLE students know who they are as a learner, how they learn, and they can communicate that to other people and apply it in any context, including when they have left school. I believe that is because of the way that we talk to them. We do talk to them about their learning so they are getting stronger and stronger at being able to do that. [School A; Shelly-school leader]

These kids talk about their learning; they know the what, why and how. For me that is massive. These kids have an active voice and they make choices. Their choices are challenged and co-constructed to something else if there is not good justification. [School B; Millie-focus group member]

Three participants highlighted the collaboration that students developed as learners while a further three participants mentioned the strong relationships that they believed had developed as a result of being in a MLE.

In terms of that whole approachability that the space provides-for the kids themselves it is a situation where kids won't be afraid to come and talk to me even though I don't teach them. That is a real positive that they feel they can have those relationships. [School A; Matt-focus group member]

I would say that if you spoke to students that they would say that we cared here, particularly in tutor groups. Their success really might be quite different elsewhere and a lot of students would say that they got more out of this school because we care about them. Our school motto is 'nobody slips through the cracks'. [School A; Rita-focus group member]

Three participants reported that they noted students were fully engaged, happy and confident in a MLE.

I have never seen such engaged students; they are having a 'blast' but there is an underlying depth that goes with that. The 'proof has been in the pudding' with the standard of work that they produce. The writing they did for me last term was spectacular. I have never seen anything like that from Year 9 students. They went so deep and they were making connections across modules that they had done. It is really connected learning. I was talking about a poem by Janet Frame recently and where that discussion went afterwards blew me away! As an ex English marker it was 'excellence'. It terrifies me to think where they might take this in three years' time! [School B; Cathy-senior leader]

The personalisation makes such a difference. The fact that they get a say in what module they go into. The fact that the large majority of modules have choices within them as to what mode of inquiry they are taking. So if they are disengaged after all that choice it is a choice to disengage and we have to work out why. They actually have to work really hard to disengage. [School B; Stuart-focus group member]

Question Seven (Question Six for focus groups): How motivating is it for students working in a MLE as opposed to a traditional classroom? Do they need to have different skills?

This was a two part question that considered the perceived motivation of students in a MLE as compared to a traditional classroom and the different skills students needed, if there were any. Two candidates based an answer on what they perceived to be a well-functioning MLE.

The combined results were:

Table 4.8: Motivation							
Schools	A		B		C		Total
Participants	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
It is very motivating.	1	-	2	1	-	-	4
It is very motivating in a well-functioning MLE.	1	-	-	-	1	-	2
The motivation is related to the teaching not the MLE.	-	-	1	-	1	-	2
It is difficult to ascertain the difference in motivation in a MLE.	-	1	-	-	-	1	2
It is less motivating in a MLE.	-	-	-	-	-	-	0
Total participant response.							10

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group.

Of the ten senior leaders / focus groups who were asked this question four of them stated that they believed an MLE to be “very motivating.” A further two said that in a well-functioning MLE they believed that because of the personalisation, choice and flexibility that it would be very motivating for the students. Two participants felt that it depended on the teaching and that motivation was not about the environment but about the pedagogy. The remaining two participants felt it was hard to say if the students were more motivated or not or that they were not sure that there was a difference in motivation in a MLE.

The second part of this question asked participants if they believed that students in a MLE needed to have different skills than in a traditional classroom. Participants seemed to believe that because the students in a well-functioning MLE would be taking more ownership of their learning they would

ideally need skills in negotiating, self-direction and making choices. They would need to be competent at managing their time, as well as having organisational skills and independent learning qualities. Participants also believed the skills from the front of the NZC document were important and that students needed to have a 'maturity about their learning' as well as the ability to filter or 'tune' things out. Finally the empathy and respect and responsibility to everyone in the MLE community were seen as essential traits for students to build positive relationships.

Question Eight: How has your school managed technology access in the MLE?

This question was only asked of the seven senior leaders interviewed.

School A

Senior leaders from school A reported that the school had BYOD, wireless and PCs in every area of the school. Access was no problem. Because it was 'open source' they did not pay licence fees and could afford more PCs. Teachers are encouraged to use any means the students wish to use such as Facebook, Tumbler, Instagram, Google Docs, and so on. Any platform the students wish to use is encouraged; nothing is banned. Every student has a device of some sort and the work is completed on a mixture of books and paperless systems.

School B

Senior leaders from school B reported that the school had BYOD and the students are able to bring any device, although a laptop is suggested. There are devices available for loan from the library for equity purposes for students who do not own one. There is one easy 'sign on' and access is no problem. They reported that they have universal Wi-Fi that is robust and reliable. The students use Moodle, Google Aps and showcase their work on My Portfolio. There are computers with high end capabilities for those who need them for Graphics and particular projects. There are also a small number of Apple Computer Labs available in the school. A part-time technical worker is employed at the school.

School C

Senior Leaders from school C reported that the school 'missed the boat' to some extent, being on the wrong side of wireless technology for two years. They had floor boxes to plug in network cables, but found them unsatisfactory. In the last two years wireless has allowed the school to move some way towards BYOD, but not very far. Senior leaders felt that they were somewhat restricted in this area because of the community demographics. BYOD for some of these students is a Smart Phone. The school has however, invested a lot in wireless technology recently and there were now sets of iPads and Chromebooks available with a ratio of 1:2 or 1:3 in a larger class. The students use Google Docs. There are also two computer labs, mainly for the Design and Digital Technology students. It

was noted that it was important to get teachers beyond the point of technology acting as a very expensive exercise book. Also the danger that a school can be seen as a '21st century school' or a 'good school' by parents simply because a school has a lot of technology, rather than the technology being purposeful and improving students writing and mathematics for example, was noted.

Question Nine: How important are the relationships between staff and between students and staff in a MLE?

This question was only asked of the seven senior leaders interviewed. The combined results were:

The relationships between staff were viewed as very important in a MLE by all senior leaders. Because staff were working in close proximity with each other in an open space they had to work well together. In School B staff were team teaching concepts and needed to be able to plan and teach effectively together. In School A staff taught next to each other, usually teaching a different subject, and needed to respect and support each other. In School C staff from different departments taught alongside each other, sharing Commons and other resources. Feedback from senior leaders at all three schools reinforced the importance of positive staff relationships:

Huge! So much of what we do is built on relationships. Without the trust and respect we have for one another we wouldn't be able to do the style of teaching and learning that we are doing here. [School B; Cathy-senior leader]

They are crucial. You have to be able to give and take complements and to have challenging conversations. [School A; Shelly-senior leader]

Teaching is very demanding so relationships are more important, because if you try to stand alone you will fall alone. The need for collegiality is stronger now than it has ever been. [School C; Samuel-senior leader]

Crucial in terms of asking people to work collaboratively across learning areas and asking people to rethink everything they do and how they do it. [School B; Donna-senior leader]

The relationship between staff and students was viewed as crucial in a MLE by every senior leader. A MLE uses staff as 'learning coaches' and 'guides' rather than the traditional teacher up the front of the room. There is increased co-construction and self-direction of learning by students with a power shift to a more equal partnership, epitomised by the use of first names for staff. With the emphasis on personalisation of learning there is a need for staff to have even more of a comprehensive knowledge of their students' strengths and weaknesses. Feedback from senior leaders reinforced the vitality of relationships between staff and students:

They are probably the key. We like to think we are a restorative, relational school and we spend a lot of time on it. It is the key. It is the key to discursive teaching, the key to respecting the environment, the key to ako (teacher as learner / learner as teacher). It is the key to creating a community. [School C; Samuel-senior leader]

In terms of the students they are crucial because we do restorative justice. The only way that you can restore something is where it exists in the first place, so the relationship has to be there. You never yell at a student. The conversation is always about their learning. Teachers try first and only come to us when the relationship has broken down. The communication is really important. [School A; Shelly-senior leader]

The teacher / student relationship is at the heart of everything. [School A; Sara-senior leader]

Question Ten (Question Seven for focus groups): What challenges has an MLE setting provided for the school?

This question was designed to consider the challenges associated with such a major change. Table 4.9 overleaf shows the aggregated data from both the seven interviews and three focus groups in response to Question Ten.

Challenges Identified by Senior Leaders

Senior Leaders from each school were conscious of the expectations and perceptions of the community.

The biggest challenge is taking the community with you and including them in the vision. The community perception is difficult to change. They have a view about what a school is supposed to look like based on their own experience. A MLE is so different to a traditional school. [School B; Donna-senior leader]

There is the challenge of being 'new' and always under the spotlight. [School B; Donna-senior leader]

We do not spend time on things like uniform. Some people in the community find this difficult. [School A; Shelly-senior leader]

Table 4.9: Identified Challenges							
Schools	A		B		C		Total
Participants	SL (n=2)	FG (n=4)	SL (n=3)	FG (n=2)	SL (n=2)	FG (n=5)	
Community support / perceptions.	1		1	1	1		4
External measures- such as NCEA.					1		1
Departmental expectations.	1						1
Difficulties in changing pedagogy.			1				1
Staff retrenching into old practices.	1				1		2
Practice is always visible and open to critique.	1		1	1			3
Staff inconsistencies.	1	1					2
Tension between curriculum and personalisation.				1			1
Tracking student progress can be difficult.			1	1			2
The 'ownership' of space and equipment.	1		2			1	4
Increased noise or lack of heating / light.		1			1		2
Having 'fit for purpose' furniture.					1		1
Lack of finance.						1	1
Prioritising buildings for different subjects.						1	1
Infrastructure may be lacking.			1			1	2
Total participant response							28

Note: n = number of participants; SL = Senior Leaders; FG = Focus Group.

Two expressed concern with the external measures they were trying to use in a MLE (NCEA) and the difficulties of tracking student progress.

There is the constant challenge of tracking students and to genuinely assess or evaluate whether the MLE is making a difference over a traditional school. [School B; Donna –senior leader]

The major challenge is that the external expectations and measures are still traditional. We live in an assessment driven world with NCEA and we still have to prepare students for exams. There needs to be a compromise between what we are told to provide as schools and what we are expected to provide and are measured against. It is easier to line kids up in straight rows and they regurgitate information. [School C; Samuel-senior leader]

Four senior leader responses were also concerned with ensuring that staff were consistent, constantly reflecting on their practice and not retrenching to traditional pedagogy.

Stopping people reverting to what they know and putting up invisible walls / real walls between classes. Having flexible walls allows teachers to revert more easily. [School A; Sara-school leader]

Keeping staff reflecting and improving pedagogy in the space can be challenging. [School A; Sara-senior leader]

It challenges staff to be flexible and to be visible and open to critique. [School B; Cathy-senior leader]

It challenges the way staff teach. It is no longer acceptable to stand up the front and lecture or entertain. [School B; Cathy-senior leader]

Challenges Identified by Focus Groups

The practical elements of noise, heat and light were identified by one focus group while the ‘ownership’ and care of space and equipment and inconsistencies of staff were identified by other focus groups.

The noise between classes (especially period 5 on a Friday), between Communities and at exam time can be challenging. [School C; Rita-focus group member]

Inconsistent clocks and some students being allowed to pack up early is challenging for others. [School C; Nigel-focus group member]

One focus group highlighted the tension between curriculum coverage and personalisation. The tracking of students was also identified as challenging.

The number one challenge is the ongoing tension between curriculum coverage and personalisation. [School B; Stuart-focus group member]

A challenge from a pastoral and academic mentoring point of view is how to get all the little bits of information that come in and get a really good picture of students working with different people across the school' with it changing all the time. [School B; Millie-focus group member]

Further challenges identified by focus groups were community expectations, visible practice, prioritising buildings, and lack of infrastructure or finances.

Question Eleven (Question Eight for focus groups): Do you believe that MLEs have affected the learning outcomes for your students and how do you know?

School A

One school leader reported that a MLE had definitely affected their results positively but believed it was the structures and systems that supported every student and teacher that made the real difference. The 100 minutes, the space, project work and strong leadership were all contributing factors to success, according to this Deputy Principal. Another leader from the same school also recognised the MLE as one ingredient that acted as an enabler for academic success. However, more important in this person's view were the learning relationships and conversations. Academic mentoring, developing a pathway to the future and projects that extend students and connect with the community were all identified as valuable ingredients contributing to successful outcomes for students at this school.

The focus group felt that it was difficult to judge the direct correlation between a MLE and results because there were so many other influencing factors. They did however agree that a MLE had positively impacted on the skills from the 'front of the curriculum' with students being more respectful and tolerant of others and of differences. They also noted that they believed that teachers were more accountable and more reflective as practitioners in a MLE.

School B

One school leader believed that the way the MLE was operating had totally affected their results in a positive way. They reported that this was evident in the engagement and the metacognition the

students displayed as they talked about their learning and their learning styles. They also commented that the connectedness of learning and personalisation was more of a natural flow for students coming from a Primary setting than the isolation of subjects in a traditional Secondary School. This view was supported by two other senior leaders at the same school who both felt that they were making a huge difference to learning outcomes through the MLE. One stressed that it was the pedagogy and student-centred practice that offered choice and self-direction that was impacting on the outcomes and making the students engage more deeply in their learning. They felt that while the space was an enabler it was not going to change poor practice and there had to be a pedagogical shift. They believed that lack of space was a physical barrier for integration in a traditional school. This leader also stressed having 90 minute periods as a 'game changer' for forcing teachers to change from traditional teaching.

The focus group believed that a MLE had positively affected the outcomes for the students at their school but again emphasised that this was not because of the environment but rather the pedagogy. They saw the environment as an enabler for changed pedagogy to occur.

School C

One senior leader reported that based on the NCEA evidence the answer would be 'no'. They felt other areas such as confidence and independence were being developed in a welcoming, safe environment where students were happy to perform in front of others, but the NCEA results were inconsistent. Another senior leader from School C felt it was difficult to answer this question because they did not believe the MLE was being used to its potential; that they still mostly operated as a regular classroom with some break-out space available. It was reported that it was quite rare for classes to be joined and team teaching to occur and the students did not enjoy that approach, finding it noisy and cramped. They reported that it was the 100 minutes that allowed staff to be better teachers and that good leadership and good pedagogy was the most important factor. One senior leader stressed the importance of teaching the ten independent learning qualities and felt valuing these would force teachers out of their traditional learning areas.

The focus group from School C were unsure about this question but felt that the school may be slowly improving. They stressed that to take full advantage of a MLE meant that the learners needed to have independent learning skills. There also needed to be a culturally responsive

pedagogy and consistency in practice. They felt that the school was continually seeking opportunities to help students learn and become life-long learners and to make the school a better place and no members of the focus group would ever want to go back to a traditional school.

Extra Questions for the focus groups

Question Nine: What would be useful to know about a MLE if you were in charge of building a school?

Time allowed me to ask two of the focus groups this question. The combined results were:

They believed that before worrying about the building a school should consider what they wanted their graduate students to be able to do and make the buildings, pedagogy, timetable and structures fit the students. Participants expressed the importance of working with the community, not backing down from the vision and not compromising on design ideals because of financial restraints. They suggested making the spaces flexible so that they could be used in a variety of ways, with a mixture of open and closed-off spaces with some quieter spaces. They stated that the physical features complemented everything else in a MLE. The participants advocated cross-curricula offices as a powerful tool in the prevention of 'silos' developing and encouraging cross-curricula understanding. One participant from a Science background noted that pods in the centre of science labs did not work and suggested keeping the services around the edges of the labs. Finally participants summarised enthusiastically with the statement "What an amazing opportunity!"

Question Ten: Is the behaviour of students different in a MLE?

Time only permitted me to ask one focus group this final question. Their responses were:

They believed that there was a higher level of trust and respect because the school treated the students as individuals who were valued and they responded as such. The relationship was reportedly built on learning and the behaviour came with that. The school used restorative practices; they had taught these to the students who also reportedly used them on each other. Because there was no detentions some people assumed there was no discipline and there were no consequences for poor behaviour but that was not the case according to this focus group, who stated that it was much harder to fix relationships than complete a detention.

This group said that students were challenged but also allowed to have flexibility. They did not care about hair, shoes jewellery and so on, and focused on learning. They said their mantra was 'warm and demanding' and the staff modelled that. If a child did not understand a concept you would not

remove them from class; you would try a different approach. It was the same with behaviour. The school had pledged to never exclude a student and to never give up on a student.

This group concluded that they would never go back to a traditional school, except to help them to change to a MLE.

Summary

Chapter four has presented the information gathered from senior leader interviews and focus group from three different New Zealand Secondary Schools. It has been presented in the order that the questions were asked and in an honest and unbiased manner. There have been direct quotes used as well as paraphrasing to summarise responses. There has been no wilful admission of any information. Participants have all had the opportunity to amend their responses prior to this chapter of findings being produced.

Chapter Five: Discussion of Findings, Conclusions and Recommendations

Introduction

Chapter Five discusses the overall findings from the focus groups and semi-structured interviews presented in the previous chapter. The four research questions provide the framework for this chapter. The discussion for each research question is completed under several sub-headings based on the themes that emerged from the data collection. Conclusions and recommendations are then identified to conclude the chapter.

Research Question 1: What comprises a ‘Modern Learning Environment’ in the New Zealand 21st century secondary school context?

This question was addressed in both the senior leaders’ and focus group interviews through the initial question ‘In your opinion, what comprises, or makes up, a MLE? (Can you describe it?)’. The intent of this question was to establish a framework or definition for a MLE, as perceived by the participants. I wanted to find out what the term meant to them. The question was purposefully left open and did not stipulate either physical structures and space or pedagogical elements in an attempt to gauge an honest and responsive answer. I was particularly interested in finding out if the responses would be about the *tangible* aspects such as new buildings and access to technology or about the *intangible* factors such as changed teaching practice. One participant highlighted this and asked for clarification: “Do you mean space or practice?” indicating that in her view a MLE was characterised by so much more than just physical changes.

The responses revealed nine main themes, the most prominent of which were personalisation, flexibility, openness and pedagogy. Other themes that emerged from the data were technology, use of space, collaboration, connected learning and relationships. Of the four most prominent themes identified when describing a MLE, all are intangible elements. Of the remaining five themes most identified by participants, three of these – collaboration, connected learning and relationships - are also intangible aspects. In total, seven of the nine descriptors used by participants when defining a MLE are intangible elements. While the term ‘modern learning environment’ suggests a physical shift to a ‘state of the art’ environment or physical place, the seven most dominant descriptors of the nine used by participants are not about space, technology, and furniture, and so on.

Intangible Aspects

An intangible aspect can be defined as any element which is immaterial or impalpable, suggesting that it could occur in any physical environment. This is reflected in one senior leader’s comment that the teaching and learning could occur “in a tent” and it was in fact the pedagogy and teaching

practice that was the most significant factor in the shift to a MLE. Changing the mind-set of teachers and leaders to accommodate modern learning approaches seemed to encompass defining a MLE more succinctly and specifically than merely shifting into a new physical building with modern furniture and an increased use of technology. This suggests that the physical shift could be, as described by one participant, a 'smokescreen' rather than a true step forward into an education that would prepare students for the 21st century. It is possible to work in a 'Modern Learning Environment' or MLE and 'retrench' to traditional pedagogies and practices (M. Osborne, personal communication, 19th May, 2014). This is particularly apparent in schools where the flexibility of walls allows the teachers to close them and just continue teaching in a teacher-directed manner and, in addition, this highlights the slower level of convertibility identified in the work of Dovey and Fisher (2014). Conversely, the intangible aspects used to define a MLE would suggest that any classroom (or tent!) could be used as a MLE with student-centred programmes and personalisation.

Personalisation was the intangible element referred to most commonly by the ten participants. In formulating a school's vision it has been suggested that they should first establish their vision of personalised learning and further build this vision from a totally student-centred approach (M. Osborne, personal communication, 19th May, 2014). Osborne (2014) argues that to move towards a MLE, the community's vision must lead a pedagogical shift. He in fact warns that a move towards more personalised learning will not occur with simply new physical structures, a view reinforced by other researchers (Woolner et al., 2014). This was supported by several participants who also referred to 'working backwards' from what a graduate student should look like, to how programmes and structures could best support this vision. Participants also referred to programmes having elements of choice, being student-centred and using differentiation. Despite the fact that personalisation has been the aim of teachers for many years, the overall findings of this research project indicated there was a clear connectivity identified between a MLE and the personalisation of teaching programmes by participants. Moreover, the thinking around personalisation has moved to a focus on investigating what individual students are interested in and offering choice to students. It also encompasses giving students choices about working individually or in smaller groups, and choices as to how they intend to present and evidence their learning. The tangible space to have students work in larger or smaller groups or individually is an enabler for staff to personalise programmes (Nair. P, 2014). Moreover, the large open spaces of an MLE discourage teacher-directed lessons, particularly where several classes from different subjects and year groups share a space, a view supported by recent research (Hammonds, 2010).

Alongside personalisation is the notion that students are active participants in the learning process. They co-construct their learning goals and needs (Eiken, 2011). They learn about how to learn and can recognise what their preferred learning style is. There is an apparent shift in the power base with staff no longer teaching from the front of the room. In fact in a MLE there is no 'front of the room' and staff tend to move between small groups as a 'guide on the side' in a community of learners (Rogoff et al., 2001). Participants felt that this was a marked change of practice for many teachers who had taught by being a 'front row charismatic entertainer' in previous traditional settings.

The change in the role of the teacher was further solidified by the move away from traditional forty-minute periods in all three schools. Participants responded that the move to periods of 90 or 100 minutes had, more than any other factor, changed their teaching practice and promoted personalisation. The longer time slots meant that students were unable to sit and listen passively and needed to be more active participants, working in groups and self-directing their learning more. Self-direction was seen by participants as a very positive step in students' ownership of their learning and in providing the opportunity for students to have choice as to how the learning might look. At one school this meant choosing modules of work to address a concept rather than subjects. This meant the same concept could be offered in a variety of ways and students could choose the way that best suited their learning. 'Learning Coaches' or 'Mentors' worked alongside individual students to track their progress and ensure the curriculum was being covered.

Furthermore students were given the opportunity to present their learning in a way that best suited them. There was the option to use traditional 'paper and pen' or technology in a variety of forms. Choice was further offered in two of the three schools through one-day projects where students were encouraged to explore an area they felt passionate about, with the support of a staff member. The huge significance of personal coaches and mentors mirrors the role staff hold in the personalised programme Kunskapsskolan (KED) operating in 33 schools in the United Kingdom (Eiken, 2011). Here, in-one day projects, students in my sample schools are encouraged to work with the local community and to be creative and extend their knowledge. The totally personalised programme accounts for one-fifth of their timetabled week and seemed to be valued by staff and students alike. In one sample school the personalisation extends to staff who are also encouraged to 'follow their passions' and teach a module that was not confined to their subject area. Personalisation extends to the staff as well as the students according to this principal.

Flexibility was another intangible aspect referred to by seven of the ten participants when describing a MLE. When explaining what the term 'flexibility' meant for them, participants referred to the

flexibility of choice which enabled students to work in small groups or in specialised areas or space to suit the intended activity. They also referred to 'break out' spaces where small groups or individuals could remove themselves to work on a task. All of these activities reinforced a change in pedagogy. Overall, the findings show that here was a move away from teacher-directed lessons where students sat in rows or small groups but primarily worked as individuals on a task set by the teacher. Students were now viewed as active participants making choices about what and how they were learning and how they would present that learning. They were expected to manage their time and to have skills in organisation, communication and working with others.

The skills needed by future students are difficult to predict, thus flexibility has been seen as essential in building schools for the future (Dovey & Fisher, 2014; Multimedia, 2014; Nair, P, 2014; Osborne, 2013). All three participant schools used areas for small groups of students to work away from the body of the class and participants reported that this was invaluable. The teacher's role was markedly changed from what one senior leader called the 'clown at the front', to the 'guide at the side', working alongside individuals and small groups of students. The importance of this type of teaching in building relationships with students is crucial and while it often means having to 're-teach' a concept several times to small groups of students, the findings indicate it is beneficial in personalising teaching programmes.

Flexibility was referred to by one participant as also encompassing the idea that a learning space could be used in a variety of ways. This removed the idea of 'ownership' of any particular room which could now be used for different subjects on any one day, a concept highlighted in the work of Shank (2005). School B was in the privileged position of having a large amount of space for the number of students currently attending and was using the spaces for a multitude of different purposes and activities. Every space was considered a teaching space and it was not unusual to see groups of students working in the café or the staffroom. School B was also intending to have the flexibility of multi-level teaching in the future, where students were in a class based on choice and their appropriate curriculum level rather than on their age.

Flexibility was also used to refer to the possibility of having large groups of students together with more than one teacher. This could be team teaching in one particular subject area or cross-curricula teaching. The School C focus group spoke about the success two staff from the same department had recently had team teaching a concept, but also referred to it as rarely occurring. The flexibility to remove or put up walls was a concept more apparent in School C. It was the first of the three MLEs to be built and the moveable walls were designed to be put up or to come down, providing flexibility for staff and students. Participants from the school reported that because there were walls, staff

tended to work with them up and have largely retrenched to more traditional classroom practices rather than change their pedagogy. In an attempt to prevent this there was no 'front of the room' with a fixed white board, and staff desks have been made very small. Overall findings indicated that, despite efforts to discourage it, some staff still built a 'barricade' up of their materials in an attempt to have a teacher area. In an attempt to preserve openness, posters were not allowed to be displayed on the glass walls.

The flexibility of School C visibly distinguishes between the 'slower rhythms of convertibility' of removable walls and the 'fluidity and agility' (Dovey & Fisher, 2014) of the openness of not having walls apparent in Schools A and B. Because the walls are there, staff in School C use them to create a largely traditional classroom and this influences the way they teach. One senior leader in School C stated that she did not consider that they were a MLE and that one would be unlikely to see any differences to a traditional school in any classroom. This certainly supports the view that architecture, to some degree, influences pedagogy (Hill & Epps, 2009). Overall findings indicated that despite attempts to shift pedagogy in School C, teachers were apparently reluctant to use the flexibility that the removable walls gave them. Within the classroom however, they used the space in a variety of ways and used the Commons as break out space and for Whanau meetings on a regular basis.

Openness was an intangible element also referred to by seven of the ten participants when defining a MLE. While participants spoke of the physical openness of a large Commons which could be used by several classes, in conjunction with this came the importance of openness of practice, an area researched by Campbell et al. (2013). Physical openness was most apparent in Schools A and B where walls were not in existence so could not be constructed as barriers. This is likely to reflect the change in architectural thinking that has occurred as these schools were constructed in more recent years than School C. In both Schools A and B there were large areas that were light and airy and could be used by a variety of subject areas for a multitude of purposes. Staff taught directly alongside each other. In fact in School A staff reportedly chose to do that rather than separate themselves as they had become accustomed to working in this way and enjoyed the learning community atmosphere. All three schools believed that students were less easily disturbed by visitors as they were used to movement of students and staff as they worked.

The openness of the environment meant that students were often sitting quite close to others who were working on different subject areas and were in a different year group. Students in many of these classes were reportedly encouraged to be active participants and to move around in the lesson. One staff member from School A spoke about using the 'bench of knowledge' where

students moved to a specific place be taught a specific concept by the teacher. She then moved away to help others while this group taught the next group and so forth. There was reportedly another staff member who had set up discussion pits and circles and moved them around for specific things. Students were reportedly encouraged in all schools to move the furniture to be arranged in a way that best suited them and their learning activity. It was stressed by several staff that furniture needed to be durable to withstand this use and varied to afford choice to the learners. While staff enjoyed the openness, senior leaders in all three schools stressed the need to have some small spaces where an individual or small group of students could go to read or work in silence. The rider to this was the warning that these 'fishbowls' were at times used by some students to 'hide' and not complete work.

Openness of practice was also referred to by participants. The sharing of good practice and the support and reflection in such an open environment can provide opportunities for staff to enhance their skills as practitioners (Campbell et al., 2013). To some extent, in all three schools, this openness and reflective practice had replaced the traditional professional development where so called 'experts' were brought into the school for a staff meeting. It has been maintained by some researchers that the practice of bringing in experts is denying the rich experience and knowledge often present within a school staff (Campbell et al., 2013; Lieberman & Mace, 2010). Reflective practice has been commonly cited as a strength of MLEs (Campbell et al., 2013), a view supported by participants who had come to view teaching as a shared practice open to the observation and critique of others. A learning community can offer collegiality and support for teachers (Lieberman & Mace, 2010). Participants at all schools spoke of the careful placement of less experienced teachers next to more experienced staff and the valuable sharing of practice and professional discussions that were occurring. They also reported on the support offered where there are several teachers in close proximity in a difficult situation.

Seven of the ten participants identified a change of pedagogy as a determining factor when describing a MLE. These participants were resolute that new buildings alone did not determine that a school was a MLE. In fact participants at School C believed that because they did not have a changed pedagogy, they were in fact not practicing as a MLE, beyond the fact that they had new buildings. One senior leader from School B had described new buildings and technology as often being a 'smoke screen' for a MLE in a school and emphasised the importance of changed pedagogy to future focussed practices. This was a view supported by participants at all three schools who described the new buildings as a 'shell' and reinforced the importance of 'what goes on inside'.

Pedagogy begins with a vision of personalised student-centred learning. It can be viewed as the first logical element in the pedagogy, space, technology iterative process (Radcliffe, 2009). While the new buildings alone do not determine a MLE, the space and openness acts as an enabler for a change of pedagogy that can lead to a change of practice. It was apparent at both Schools A and B that a changed vision and pedagogy had influenced practices far more than at School C where the lack of emphasis on pedagogy and the flexibility of walls had allowed staff to largely retrench to the silos of classrooms.

Four participants identified collaboration between staff as a defining factor in a MLE. While it would seem that collaboration between staff is important in both a traditional classroom and a MLE, it was highlighted as a defining element in a MLE. The open spaces of a MLE force staff to work alongside each other, keeping their voice and the voices of their students at a working level for other staff and students in close proximity. Rooms such as presentation rooms need to be booked and negotiated with other staff. Communal equipment needs to be well cared for and areas need to be left tidy. One participant spoke of the 'difficult conversations' staff now needed to have with each other.

Furthermore the openness to critique and shared practice meant there was more of a focus on collaborative relationships. Staff in School B were planning modules together and needed to have trust and respect for each other for co-operative module teaching to be effective. Staff in all three schools shared offices with colleagues from different departments; in School A these offices were changed annually to encourage further collaborative relationships. Inexperienced teachers were often teaching beside a teacher with far more experience. Participants recognised the additional support of having another teacher in close proximity when dealing with difficult situations with students. The shared teaching practice and informal observations of a MLE cemented the importance of healthy collaboration between staff (Campbell et al., 2013).

Connected learning between subject areas was a further intangible element identified by three participants as defining a MLE. This was more apparent in School B where subject areas had combined to plan and teach and the decision had been made not to establish traditional departments. This type of vision necessitates the total deconstruction of the curriculum by teachers to collaboratively establish the key essential learning areas in subjects. It is yet another significant mind-set change for teachers who may only feel comfortable in their own subject area.

The formation of strong relationships was an intangible element also highlighted by three participants when defining a MLE. It seems initially surprising that this would be a defining factor in a MLE and certainly one could logically expect this to feature in any classroom. The identification of

relationships epitomises that a MLE is far more concerned with intangible than tangible elements. Staff in a MLE are being asked to work with other staff more collaboratively (Lieberman & Mace, 2010) and there is a definite 'power shift' with students becoming active participants in their learning. Teaching and learning is far more personalised and staff and students alike are viewed as learners in a far more equal partnership.

Tangible Aspects

Only two of the nine most common characteristics used to define a MLE were tangible elements. One was technology; the second was physical space. Six of the participants identified technology as an important when defining a MLE. There was a distinct move away from traditional computer suites and a mixture of wireless and wired technology was available at all three schools. The two schools which were operating in higher decile communities were able to rely almost totally on students bringing their own devices to school. It was more difficult in the third school which attempted to provide enough technology for students to share access to it. Any form of technology was accepted at all three schools and students had unlimited and unrestricted access to any form of technology at any time. Students signed a 'digital citizenship' agreement. With teachers moving around groups of students as a 'guide on the side' students were encouraged to be using their phones, iPads and so on to research and present information. In School A the computer system runs almost in its entirety on 'open source' software. There was an acceptance that students know how to use all forms of technology.

Students used technology of their choice to access and present their work in any way they chose. Blended learning and access to the internet was taken for granted by staff and students. This gave students the ability to self-direct their learning, to communicate and collaborate, and to engage in learning anywhere and at any time. Work was accepted in a variety of forms by staff, and students were encouraged to use any format that suited them. There was a mixture of paperless and pen and paper approaches being used. At School B there were lockers available with individual power points where students' technology can be charged and left in a secure fashion. Technology fitted seamlessly into the everyday workings of the school and students were given the freedom to use it in a way that best supported their learning at the stage that they were up to. Technology was used as a tool or as an enabler to support the personalisation of a student-centred approach.

Use of space was an element identified by half the participants. Ideally in a MLE there is no 'wasted space'. Corridors are largely eliminated from plans and all spaces are viewed as potential learning spaces. All spaces are versatile and staff 'ownership' of specific areas is absent. All spaces, including the staffroom are potential learning areas and students may work in any area, with any furniture

they are comfortable using. While space is not the only determining factor of establishing a MLE, it is certainly an enabler of the change to a student-centred pedagogy and one of the three main influencing elements, alongside pedagogy and technology (Radcliffe, 2009).

Research Question 2: What elements of ‘Modern Learning Environments’ are being implemented?

To ascertain the main elements of a MLE that participants recognised as being implemented in their schools I have collated the results from questions two, six, seven, eight and ten and identified the main themes. These themes emerge from the aggregated data from the interviews and focus groups and are presented in Table 5.1.

While participants were able to effortlessly identify what defines a MLE in their view, with 55 responses, there was some disparity between this and what they recognised as actually happening in their own schools, with only 38 responses to question two. The main themes that participants identified in their own schools were personalisation of teaching and learning and the use of space.

Question number:	2	6	7	8	Focus group extra question 10
Question:	What elements of a MLE are being implemented in the school?	What things do you see happening with the students as learners in a MLE?	How motivating is it for students working in a MLE as opposed to a traditional classroom?	How has your school managed technology access in the MLE?	Is the behaviour of students different in a MLE?
Themes:	Personalisation. Use of space.	Articulation and ownership of learning.	High levels of motivation.	Blended learning.	Restorative practices.

Personalisation of Teaching and Learning

To prepare 21st century learners there has been an increased emphasis on personalising learning and moving to a more student-centred pedagogy, with a focus on inquiry-based learning (Madden et al., 2012). This is reflected in my research, where personalisation of teaching and learning was identified as occurring in their schools by seven of the ten participants. It also correlates with personalisation being the most identified element identified when participants defined a MLE in question one. Choice may be viewed as a central part of personalisation with students being

offered choice in the context of learning, and also in the evidencing of that learning. Differentiation and the move away from teacher-directed lessons and teacher convenience to student-centred inquiry-based learning is central to personalising learning (Madden et al., 2012). Collaborative planning and increased guided self-direction within the programmes offered can improve engagement for both staff and students. Moreover, “Active and engaged teachers sharing cohort spaces-learning spaces are providing more focused attention to student learning behaviours” (Madden et al., 2012, p. 32). Students in cohort learning are able to be more engaged in the learning process and to exercise choice to articulate their preferred learning styles. Learning coaches can play an important role in gaining an increased knowledge of their students’ learning progress in a MLE as they move around groups and individuals rather than teaching from the front of the room. The communication between school and home is key to a personalised education which traverses the school walls. Learning meetings with families have replaced traditional teacher/parent single subject interviews in many schools where poor patronage at parent interviews were indicative of their ineffectiveness and lack of value to parents. Family or whanau meetings are now seen by schools as a more meaningful and personalised approach to maintaining effective communication.

Use of Space

Space that is able to be changed by its users to suit their learning needs is generally considered to be a ‘flexible learning space’ (Parnell & Procter, 2011). Five of the ten participants identified ‘use of space’ as an implemented MLE element at their school. Schools A and B had a diversity of learning spaces and a higher level of fluidity than School C. The effect of this was that Schools A and B tended to use the spaces for new student-centred pedagogies, whereas School C had the ‘convertibility of reversible change’, a concept identified in the work of Dovey and Fisher (2014). Primarily School C used the Commons as breakout space, but aside from this, tended to largely operate within the confines of a regular classroom with a flexible wall. This highlights the concept that space is merely a ‘tool’ for change and that if the users do not have a flexible attitude then change will not occur (Parnell & Procter, 2011). Ironically, School C still appreciated the space that could be used for small groups and ‘use of space’ was identified by all three participants from this school. Schools A and B had large, open, airy spaces without walls of any kind. These spaces could be used in a variety of ways from combining groups together to small groups or individuals working on different activities. School A also had several small, quiet areas for individuals wanting to work in silence. There cannot be an assumption made that because the space changes, so too will teacher practice. The intangible changes regarding the flexibility of attitude need to occur to allow the tangible tools to be used to their full potential. This is summarised in the work of Parnell and Procter (2011) who conclude: “In order to support a truly flexible learning environment, it is argued

that learners (and their teachers) need to feel enabled to appropriate and shape their learning environment to support their learning needs” (p. 78).

Articulation and Ownership of Learning

The move towards student-directed learning brings with it increased independence and responsibility for learning. Articulation and ownership of learning evolved as central themes from question six: ‘What do you see happening with the students as learners in a MLE?’ Examples of personalisation were evident as students spoke about their learning, according to participants. Many spoke with apparent pride about the ability of the students to articulate their learning achievements, progress and future goals. One participant credits this to the learning conversations staff are constantly having with students and states this has resulted in students becoming more aware of and more confident at articulating their own learning needs. Regular tutorials with learning coaches and mentors to ‘stocktake’ credits gained, predict future credits and set learning goals and actions were cornerstones of these learning conversations. Co-construction of personalised learning programmes and self-direction of independent work on devices was becoming common-place in these MLEs. One senior leader reported that students were doing a lot of inquiring and exploring through discussion and questioning. She described their learning as a “series of provocations and explorations ... and then diving a bit deeper into an inquiry and finding ways to evidence their learning”. Attributing it to the active voice and choice in the ‘what, why and how’ of their learning, participants from a focus group spoke of the high levels of motivation amongst students in a MLE.

High Levels of Motivation

Several researchers have reported on the higher levels of engagement and motivation evident in a MLE (Eiken, 2011; Jankowska & Atlay, 2008; Wilson & Randall, 2010). Motivation was considered in question seven: ‘How motivating is it for students working in a MLE as opposed to a traditional classroom?’ Six of the ten participants believed that a ‘well-run’ MLE was more motivating than a traditional classroom while two felt it was dependent on the teaching, rather than the MLE. Personalisation, choice and flexibility were all elements associated with higher levels of motivation. It is worthy to note that these are all intangible elements not necessarily concomitant to a MLE, but certainly enabled, by the space offered in a MLE. None of the participants spoke of the tangible elements such as new rooms, furniture or technology as influencing motivation levels. Students are more involved in their learning and the ownership and active, self-direction of personalised programmes is more motivating than the passivity associated with many traditional classrooms.

Blended Learning

Self-directed learning involves the use of 'embedded, seamless' technology any-where and every-where in our schools (M. Osborne, personal communication, 19th May, 2014). The way this is managed is largely dependent on the resources of the wider school community. Question eight asked: 'How has your school managed technology access in a MLE?' The responses to this question were varied, dependent on the school's approach to technology. A commonality, however, is the move away from traditional computer suites, with the exception of specialist subjects such as graphics. This reinforces the intangible shift highlighted in the move away from the lecture-style approaches of the past (Pretto, 2011). BYOD is largely encouraged in MLEs with any device being deemed acceptable, including a smartphone, the proviso being that schools in lower decile areas need to provide an alternative option for accessing a device for students who are not in a position to purchase one. Schools operate a single sign-in system in an environment of robust and reliable Wi-Fi. Learning is evidenced through a mixture of paper and paperless presentations. Tracking this is an important part of monitoring personalised learning. Students are able to access knowledge quickly on a range of devices and are constantly using their devices in every subject area. Blended learning is natural, both in and out of school. It has become such 'assumed practice' in schools that many participants failed to mention it in other questions. Students are far more confident and competent than some staff with technology and use a variety of platforms in their every-day life. There is an acceptance that students will know how to use technology and will use it responsibly. Digital citizenship is awarded and there are no restrictions on sites. Technology has become an integral part of the way students learn and live their lives (Osborne, 2013).

Restorative Practices

A learning partnership between schools, students and their families and the wider school community is more apparent in MLEs. This involves a power shift as students take more control of their learning. The shift by many schools to a 'first name basis' between staff and students parallels a move to restorative practices. Restorative practices emerged as a theme from question ten: 'Is the behaviour of students different in a MLE?' This was an extra question and only asked of one focus group. However in all three schools the focus on relationships was reportedly viewed as vital and restorative practices were employed. Students were actively taught restorative practices and staff in two of the schools wore the restorative conversation around their wrist as a constant prompt for restorative conversations. Restorative practices are in line with more of a balance of power that is evident between staff and students in a move away from punitive discipline. Furthermore, the move to MLEs has been found to increase the support teachers feel they are receiving from their colleagues (Madden et al., 2012).

Research Question 3: What changes in pedagogy are being practiced in ‘Modern Learning Environment’ schools as a result of the change to a ‘Modern Learning Environment’?

To ascertain the main changes in pedagogy being practiced in the participant schools as a result of the change to a MLE I have collated the results from questions three, four, nine, and eleven and identified the main themes. These themes emerge from the aggregated data from the interviews and focus groups and are presented in Table 5.2.

Question number:	3	4	9	11
Question:	Can you tell me about the way the school has altered any structures because of the MLE?	What is different for staff who teach in a MLE? Can you tell me about the positives and negatives?	How important are the relationships between staff and between students and staff in a MLE?	Do you believe that MLEs have affected the learning outcomes for your students and how do you know?
Themes:	Period lengths	Shared practice / supportive environment	High importance of relationships	Reflective practitioners

Period Lengths

All three participant schools have changed to either 90 or 100 minute periods and participants stated that this was one of the most significant structural alterations to enable changed teaching practice in their schools. The shift from a teacher-directed to a student-centred pedagogy is necessary in such a time frame, according to participants. It is, participants reflect, too long for students to be ‘passive’ or listening to a teacher impart knowledge. Students need to be actively participating in an active inquiry-based kind of learning that might see them move in and out of different groups and moving around the classroom. All three schools had, at some point, had training in how to plan for and manage a 100 minute period.

Shared Practice / Supportive Environment

The most positive element for staff identified by participants is the openness of the MLE that enables the sharing of practice in a supportive environment. Teaching in a silo classroom can be an isolating experience for teaching staff. With the time and pressures involved, it is not often that teachers get to witness others, particularly from different departments ‘in action’. The MLE setting involves staff either working with or alongside other staff, often from totally different subject areas. The informal sharing of practice can complement the formal observations and ‘walk-throughs’ that

may occur as part of staff professional development. Teachers can “learn a lot by watching other teachers teach” (Madden et al., 2012, p. 30). Furthermore, the support of other staff in close proximity can assist in the modification and consistency of behaviour management of students. Participants appreciated that they were in a position to witness students engaging in different subjects and the way other staff related to them. The informal or incidental learning of pedagogy and behaviour management also can act as a deterrent for poor displays of practice making staff more ‘publically accountable’.

The Importance of Relationships

The relationships between staff were perceived as very important by all participants. The shared practice of a MLE relies comprehensively on relationships of trust and mutual respect between staff. Staff in a MLE are often asked to share office spaces, teaching spaces and may work together to plan, teach or assess work. According to Madden et al. (2012) there is a shared understanding between “cohort colleagues of the theory and belief system around the purpose of education” (p. 31). Being an open practitioner necessitates being open to critique, taking and receiving complements and having difficult conversations. Positive relationships are role modelled for students. The relationships between staff and students were viewed as critical by participants for the effectiveness of a MLE. Personalisation of programmes relies on a positive relationship of trust and the importance of ‘learning coaches’ highlights a comprehensive knowledge base of a student’s learning progress and potential. The shift to a more equal power-base between teachers and students, accompanied by the use of restorative practices, are indicative of the importance of the relationships between staff and students.

Reflective Practitioners

Working in the openness of a MLE involves an increased level of critique and reflectiveness of practice. This can encourage teachers to “rethink their own pedagogy” (Madden et al., 2012, p. 31). While there was not a clear association between a MLE and improved outcomes for students because of the many other influencing factors, overall findings indicated that participants from Schools A and B believed there was a positive link. What was apparent in all three participating schools, but particularly in Schools A and B, was the huge emphasis on reflection of pedagogy by the staff. Teachers working alongside other teachers meant that they were accountable in a way that some reportedly found initially challenging. While it took some time to get used to this new way of teaching, teachers reportedly found it supportive and often chose to ‘move alongside’ another class rather than remain isolated in a large space. The constant and informal sharing of pedagogy results in staff reflecting on their practices and learning from each other. The greater opportunity to share

areas of expertise in the planning and implementation of learning also assists staff to feel more supported (Madden et al., 2012).

Research Question 4: What challenges have leaders and teachers faced in the move to a ‘Modern Learning Environment’?

To ascertain the main changes in pedagogy being practiced in the participant schools as a result of the change to a MLE I have collated the results from questions five and ten and identified the main themes. These themes emerge from the aggregated data from the interviews and focus groups and are presented in Table 5.3.

Table 5.3. Challenges in a MLE		
Question number:	5	10
Question:	What training or Professional Development do staff get or need to teach in a MLE?	What challenges has an MLE setting provided for the school?
Themes:	School vision	Community support / perceptions Ownership of space / equipment

School Vision

School vision has been identified as the area of professional development that participants from all three schools believed they were given the most training in. This corresponds with research which places the vision for the school at the forefront of the shift to a MLE (Osborne, 2013). The vision needs to be jointly determined, gaining input from staff, students and the wider community. It is a starting point in shifting the mind-set of what education should look and feel like. School B had the ‘feel’ of a university or business building. The high quality facilities, including modern luxury toilets, large number of flat screens on walls, lack of bells and the use of first names with staff, felt like no school I had ever been in before. The vision included words like ‘stimulating’ and ‘empowering’ and ‘changing world’. The vision was kept constantly in front of staff and students who were learning together in an education unlike any other.

The change to a MLE involves a physical change and so much more. For sustained change to occur the intangible elements need to change and this involves a massive mind-set shift from the staff and wider community. For this to occur successfully the vision needs to be paramount. The vision is the starting point of the process and also provides ongoing validation for changes which can at times be confronting and uncomfortable for all concerned. The move to a MLE is a journey for an education

community and it is not one that can be hurried. There will undoubtedly be resistance from many quarters and school leaders need to be patient and inclusive in decision making. Change has been described as disturbing when it is done to us, but can be exhilarating when it is done by us and we are included in the momentum and excitement of the change (Moss Kanter, 1983). Moss Kanter says, therefore, that, “masters of change are also masters of the art of participation” (p. 241). The vision needs to be at the forefront of any change to a MLE.

Community Support and Perceptions

One of the greatest challenges identified by participants is to gain the support of the community. Community expectations, especially in a traditional school, are that school will look and feel like it did when they were attending the same school. They expect to see classrooms with a teacher at the front of the room and well dressed (in perfect uniform), well behaved students. Their perception of how well a school is operating may be based on seeing these students ‘up town’ or hearing about punitive discipline administered to students who are non-compliant. The participants from the sample schools remarked how difficult it has been to alter the perceptions about ‘what education should look like’ with the wider community. One participant remarked that if a hospital said they were going to use techniques from fifty years earlier, patients would feel somewhat disconcerted. Ironically, that is what they find ‘comforting’ in a school. Nair. P (2014) highlights the important role schools have in educating the local parents and community members about how education has changed, so they do not expect to see the same things happening in schools as might have happened twenty or thirty years ago.

The schools in the sample were all built as MLEs. The parents that sent their children there were aware that this was a different format of education. Yet the schools identified community perception and support as still their biggest challenge. They held regular meetings with the community to share their vision and to promote the MLE as a responsive and effective educational choice. It is almost overwhelming to therefore consider the change to a MLE in a very traditional school in a rural setting. Ironically the decision as to what schools will gain the funds to be adapted to a MLE is largely based on the age and state of the school. Schools that need an input of capital expenditure due to the condition of their buildings, water-tightness or seismic issues are the first in line for an upgrade. The Ministry of Education is unwilling to spend large amounts of money upgrading old buildings and these schools must move to become a MLE. Ironically these are the very schools that are often steeped in tradition and have many long serving staff, some of whom were past pupils. The shift of staff and the community to a MLE is a monumental and challenging one.

Ownership of Space and Equipment

Incorporated in the shift of the mind-set of staff to a MLE are the challenges that occur when staff no longer have 'ownership' of a space or equipment. Staff who have been used to having 'their own' classroom find that they are now sharing areas and equipment with others, often not even from the same department. The participants remarked that they worried at first that their subject identity would disappear and 'where would they put their posters?' The lack of a designated space does mean the carrying of books and materials for staff from one area to another. 'Ownership' and caring for equipment was another challenge identified by participants. Previously if a department 'owned' a set of laptops for example, they would take responsibility for them. Communal ownership can cause angst amongst staff if equipment is lost or damaged. This was a challenge that one senior leader said they were still working to overcome.

Summary

In interpreting the results from Chapter Four and expounding meaning from them, it can be deduced that an MLE should start with a vision developed with the wider school community, which should be kept at the forefront of all decisions. The majority of the changes made in the move to a MLE are intangible ones, with the tangible changes acting as enablers for the new pedagogy. The shift is a major journey for staff and communities and should not be hurried. The role of the teacher in a MLE shifts from a 'teacher-directed' scenario to a student-centred 'guide on the side' partnership with the personalisation of programmes, flexibility, choice and an openness of practice. Overall findings indicate that students in a MLE use blended learning and have greater ownership and articulation of their learning. The relationships between all participants in a MLE are of huge importance and restorative practices are commonplace. For the tangible elements of a MLE to be effective, the focus needs to hold at its core, the shift of the intangible elements of practice. To illustrate the importance of the intangible elements in the move to a MLE, I propose a Modern Learning Environment Model (5.1) overleaf. The model emphasises the importance of the intangible elements, placing them in the centre. The school vision acts as the core or starting point and the two-way arrows are indicative of the reciprocal nature of the relationship between the wider school community and the establishment of this vision. Inclusive in the vision is the unique culture, values and beliefs of the community.

The intangible areas that make up the 'wheel' of the model have all been identified through this research as integral elements in a MLE. Whilst a 'Modern Learning Environment' might initially conjure images of new buildings, space, modern furniture and advanced technology, this model suggests that these are not the determining factors in defining a MLE. The intangible elements that make up the shift in pedagogy are what defines a school as operating as a MLE. Overall findings

indicate that the move from a teacher-directed to a flexible, personalised, student-centred programme is empowering and motivating for both staff and students. Self-direction and ownership of connected learning takes place in an open environment, where teachers are reflective practitioners. Strong relationships, based on restorative practices and collaboration between teachers and students are the basis of a power shift that occurs, paralleling the pedagogical shift.

The tangible elements associated with the move to a MLE act as enablers for the heart of the change (the intangible factors) to occur. A modern physical design including light, airy buildings and panels of glass provide an openness that can act as a catalyst for a process for school development and improvement (Woolner et al., 2007). The design factors should include specifically built spaces for individual and quiet work to take place. Physical space that can be used in a variety of ways is another tangible enabler typifying the move to a MLE. The changes in physical space should support the desired pedagogical and cultural changes (Woolner et al., 2014). Flexibility of layout has been described as the greatest strength of physical space in enhancing student engagement (Jankowska & Atlay, 2008). Once again, the tangible element (space) has been linked as an enabler to the intangible factors such as the flexibility of programmes, the openness of practices and high levels of motivation and self-direction. Furniture that is modern, varied and fit for purpose acts as another tangible enabler as students enact choice and personalisation within their programmes. The final tangible element enabling the intangible changes to occur is technology. Technology is a tool and easy accessibility is implicit in teaching and learning programmes at all times. All four tangible elements are depicted in the model in the background with inward arrows indicating that they act as enablers for the true change, symbolised by the identified intangible elements.

In consideration of the information from the previous chapters, conclusions relevant to the four main research questions have been formed. Based on these conclusions, recommendations are made at both a Ministry level and a senior leaders' level. Finally areas for further research are recommended and limitations of this research are identified.

Conclusions

Conclusion One: A 'Modern Learning Environment' or MLE can be largely defined in terms of intangible elements. Tangible elements serve to enable intangible elements in a MLE.

I propose the model shown in 5.1. overleaf that starts with the school vision being devised in consultation with the school community. This collaborative vision focuses on the culture, values and beliefs of the community and the skills they would want their graduate students to have. It then encompasses the intangible elements revealed by this research as integral to an effective MLE. The surrounding tangible elements act as enablers for the MLE. Considering the paucity of literature

available in New Zealand, the model is highly relevant and has a high level of practicality for schools either opening as a MLE or being adapted to a MLE as part of a recent government practice.

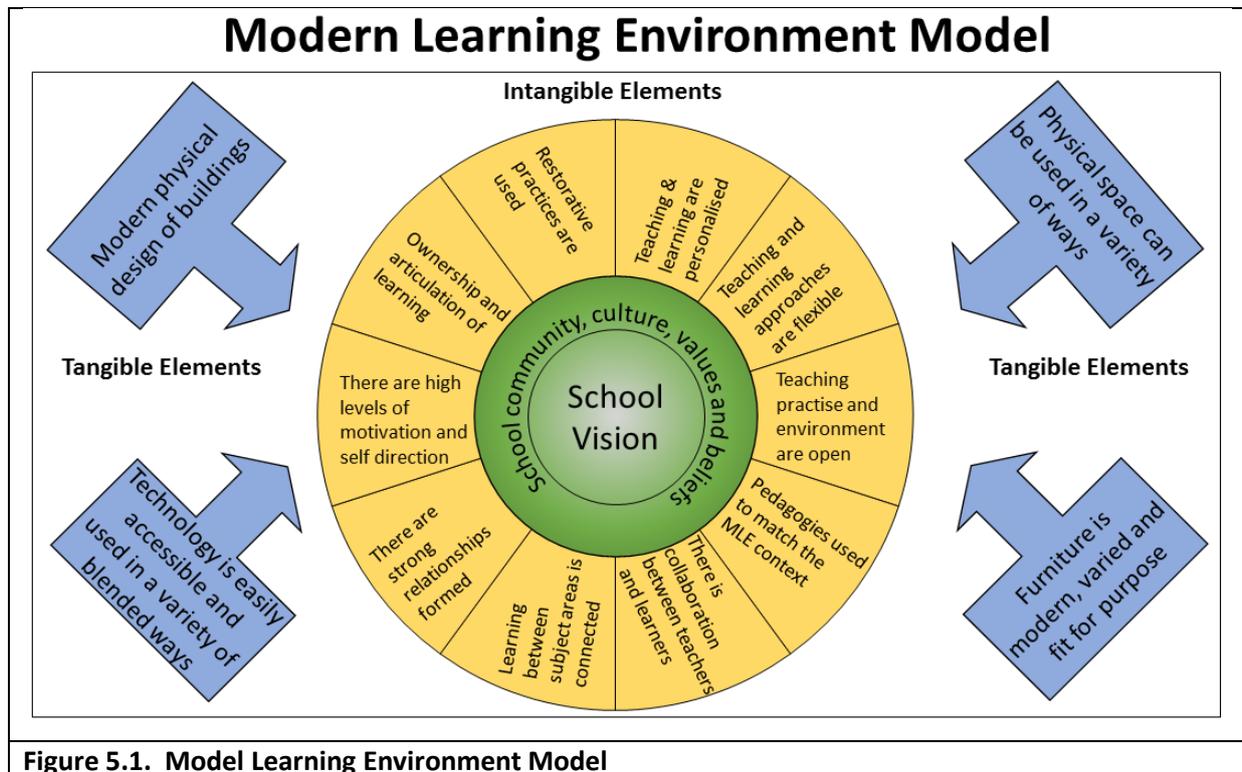


Figure 5.1. Model Learning Environment Model

While one initially might perceive a MLE to be a term associated with new buildings, furniture and technology, this research clearly indicates that far more prominent in the MLE concept are the intangible elements that indicate a change of teaching practice. The four most prominent intangible elements identified are: the personalisation of programmes; the flexibility of teaching and learning; the openness of practice; and a changed pedagogy from teacher-directed to student-centred practices. Other intangible elements that were also identified by research participants when describing a MLE are: collaboration between teachers and between learners; the opportunity to participate in connected learning; and the importance of relationships. While these elements could arguably be attributed to any classroom, they are particularly allied to a MLE setting, indicative that the shift to a MLE is primarily dependent on intangible elements.

Tangible elements that were identified by the participants were technology and the use of space. These factors were not viewed by participants as the exclusive defining elements of a MLE, but rather as the tools or enablers that allow the intangible elements to occur. This leads me to conclude that while it is possible to have elements of a MLE operating in a traditional classroom, the enablers, namely space and technology, are tools that make this considerably more feasible. Conversely, the physical or tangible changes to a MLE with a new building and ready access to

technology do not alone ensure a school will operate as a MLE, according to this definition. It is possible to 'close the flexible doors' and continue to operate as a traditional school, using technology but not student-centred practices. This finding supports the view of Madden et al. (2012) who advocate the move from a teacher-centred curriculum delivery to a learner-centred inquiry-based model. Overall findings indicate that the adoption of MLE pedagogies are necessary to ensure that staff do not 'retrench' to their previous teaching practices with which they are familiar. It also highlights the need for senior leaders to be particularly cautious about the slow rhythms of convertibility (Dovey & Fisher, 2014) of sliding or folding doors that might act as barriers to the true change to a MLE.

Conclusion two: In the establishment of a MLE the vision is an essential starting-point and on-going focus for the wider school community.

Any change can be challenging. A change as monumental as a shift to a MLE, especially in a traditional school, is likely to incur some level of anxiety and pain. Participation in a carefully managed change process can be a positive and powerful experience (Moss Kanter, 1983). The development of a vision is one important way that the wider community can have input into personalising this change to suit the culture of the community. It was suggested by participants in this research that when formulating a school vision, school communities should consider what skills and attributes they would envisage their graduates as needing to have in the modern world. The constant revisiting of this vision can help students, staff and wider communities to validate and question changes, in conjunction with their goals, for future students. Using the vision as a starting point and keeping it at the forefront of all decisions is a view supported by Osborne (2013).

Conclusion three: The gap between a 15 year old and a 55 year old has never been more apparent.

With the influx of technology we live in a period of rapid and profound change. Students have access to vast quantities of information and knowledge, at the press of a button or the swipe of a screen. They do not need to be in a specific physical space to access learning and to present it in a way that is appropriate for them (Larson & Miller, 2011). While the aging teaching population endeavours to keep up with technology, students use it constantly in their everyday lives. It is a tool so essential and so normal that classes teaching 'computing' are becoming invalid. Teachers are no longer taking students to specialised computer suites to word-process their writing. Students are using far more sophisticated technologies to access and evidence their learning and it can be commonly assumed that they will have the devices on-hand and the skills required to use them.

For a teacher to stand and deliver a lesson from the front of the room, when students can likely access the information more rapidly, checking its validity, is no longer appropriate. Today's students expect to be active participants in the learning process and learn alongside others, using their technology on a regular basis. The personalisation of programmes in a MLE means that students have more ownership of their learning and can articulate their learning needs and preferences. Providing flexibility and choice is motivating a new group of learners in our schools. Furthermore students are developing far more 'equal' relationships with teachers reflected in a move from the former punitive punishments to restorative practices. The change in some schools to staff being called by their first names by students is indicative of this power shift. The world in which many of our staff grew up and trained as teachers no longer exists. The way we view our role and the way we are perceived by students has moved on. It is time for our education to reflect this.

Conclusion four: Implicit in the change to an effective MLE is the change of teaching practice.

The intangible elements that are integral to an effective MLE must change to match the MLE context. The personalisation of teaching and learning is a critical part of this change. Students have the expectation that they will be active participants in the learning process. The openness of space can provide choice and flexibility for learners. Staff act as 'Learning Coaches' and learners are expected to self-direct and 'own' their learning, often with schools offering the opportunity for students to explore their own passions in project-based work. Longer time slots (90-100 minute periods) are viewed by participants as an important enabler in personalising programmes. Staff are actively encouraged to make use of the extra time and space and learn from others in the learning community about effective ways to manage these.

Change to teaching practice is further afforded by the flexibility students have to work in small groups or individually in a MLE. This signals a change in the role of the teacher as they become a 'guide on the side' moving between groups of students. Every space is viewed as a potential learning space and teachers no longer have 'ownership' of rooms for particular subjects (Shank, 2005). Teachers now share a large open space with several other staff members, usually from a variety of subject areas. The openness of the environment brings with it an openness of practice. Staff are 'on display' in their teaching practice in what has been called a movement to 'de-privatize practice' (Campbell et al., 2013). Acting as reflective practitioners in a supportive environment can allow staff to learn from each other (Nieto, 2003). This was certainly endorsed by the sample participants who unilaterally valued the 'informal professional development' they gained from working in a shared practice, exposed to the witness and critique of others.

Relationships between staff are further cemented through MLE schools disseminating departments throughout the school for both teaching and planning. Offices tend to be 'open plan', including the offices of senior leaders. Regardless of whether there is team-planning and teaching of units, there are reportedly cross-curricula connections made between subjects for staff and students. Moreover, staff are witness to students working in different subject areas and take collective responsibility for the behaviour of the learners. Unrestricted technology is accessible 'anywhere and at any time'. Student-centred pedagogies are actively promoted in a distinct move away from 'teacher-directed' practices and students are encouraged to articulate and take ownership for their learning. All discussions with staff focus on learning and positive learning relationships are viewed as critical.

Conclusion five: Changing the mind-set of staff and of the wider community in the move to a MLE can be an extremely challenging journey and should be supported.

Despite the monumental shift in education as the government builds MLEs, there is a paucity of literature affirming the benefits or otherwise of such a change in the context of New Zealand secondary schools. Further research is essential if the government expects the change to be a true change to 21st century pedagogies and teaching practices. Teachers need to see the evidence linking such a change to achievement; and these links are not yet conclusive. Furthermore, teachers and communities need to be taken on a journey in order to enact such a change successfully, a journey that cannot be hurried. As Moss Kanter (1983) states, change is "disturbing when it is done to us but can be exhilarating when it is done by us" (p. 241). Managing the change to a MLE so that it is collaborative (Cardno, 2012) and starts with the formation of a vision for future students, is an appropriate way to begin this journey. Cardno states that: "Change management and collaborative management are two concepts which are inextricably entwined" (p. 127). Changing the mind-set of teachers and wider communities about how education should 'look and feel', based on their own experience and training is a challenging task, according to participants.

Senior leaders and staff need to be supported throughout this change. Ironically it is the schools which are older, often with seismic and water tightness or structural issues, that are having the change to a MLE made mandatory. Many of these are steeped in tradition and pride and may well be suspicious of such a huge shift in pedagogy. Rural communities with traditional values may expect a school to look and feel like it did when they attended. Furthermore staff may have largely taught one way for many years and could well feel reluctant and uncomfortable with the change. If the government intends to enact real and sustained change to embed not only the tangible elements but, more importantly, the intangible elements of a MLE, they need to support senior leaders and staff to lead this change in their community by providing training and education.

Otherwise the money put into new buildings will be just that - new buildings. Boards of Trustees could well design schools with flexible walls and staff could still retrench to what they know best, shut the doors and teach in the same way they always have done.

Recommendations

At policy level:

1. That the Ministry of Education provide support and resources for Boards of Trustees, senior leaders and staff to understand and manage the change to a MLE.

At governance level:

2. That Boards of Trustees and school leaders develop a culture of inclusiveness and collaboration with the wider school community to manage a measured journey of impending change.

3. That Boards of Trustees and school leaders develop a vision with the wider school community defining the qualities they envision their graduates to have attained. This vision should be kept at the forefront of all decisions.

4. That Boards of Trustees and school leaders consider the fluidity and agility of openness when designing an MLE, rather than the convertibility of folding or sliding doors, which is more likely to lead to the reversing of pedagogical reforms.

At school leaders' level:

5. That school leaders support staff to focus on the intangible elements likely to enact real and sustained change to student-centred pedagogy in a MLE.

6. That school leaders seriously consider the use of structural changes such as the use of 90-100 minute periods and the dissemination of departments in both open planning and teaching spaces to ignite and sustain change in teaching practice and form cross-curricula connections.

7. That school leaders focus on building positive, respectful learning relationships and promoting restorative practices in a 'learning community' in their schools.

Further research recommended

1. That there be research undertaken into the benefits or otherwise of the pedagogical shifts in education that are occurring in 'Modern Learning Environments' in the context of New Zealand secondary schools.

2. That research is undertaken into the links to achievement for students learning in 'Modern Learning Environments' in the context of New Zealand secondary schools.
3. That resources are developed to support Boards of Trustees, senior leaders and staff to understand and manage the change to a 'Modern Learning Environment.
4. That resources are developed to promote and assist existing schools to promote the change to 'Modern Learning Environments' within their wider communities.

Limitations of the study

The first limitation is because of the small number of research participants it is possible that the findings and therefore the conclusions may not provide an accurate representation of the perceptions and experiences of all senior leaders and staff in MLEs.

The second limitation is that all three schools in my sample were opened as MLEs, rather than representative of MLEs adapted from a traditional school. Existing schools are likely to have an existing culture with expectations that may be more challenging to change.

Final word

This study has explored Modern Learning Environments in three secondary schools in New Zealand. The findings and recommendations may be of interest to secondary schools who are about to begin their journey in the adoption or adaptation to a Modern Learning Environment. In concluding that this is far more than a physical, tangible shift, the move to Modern Learning Environments is a significant way forward for the future of secondary education in New Zealand.

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Appendices

APPENDIX A - Interviews information



INFORMATION SHEET

Title of Thesis: The Move to Modern Learning Environments in New Zealand Secondary Schools.

My name is Jo-Anne Bisset. I am currently enrolled in the Master of Educational Leadership and Management degree in the Department of Education at Unitec Institute of Technology and seek your help in meeting the requirements of research for a Thesis course which forms a substantial part of this degree.

The aims of my project are to:

1. -To define and describe what comprises a 'Modern Learning Environment' in the New Zealand 21st century secondary school context;
2. -To identify and critically examine the elements of 'Modern Learning Environments' that are being implemented in three secondary schools in New Zealand;
3. -To identify the pedagogical changes that have occurred as a result of teaching and learning in a 'Modern Learning Environment' in these three schools.

I request your participation in the following way.

I will be collecting data using an interview schedule and would appreciate being able to interview you on the 8/8/14 at a time that is mutually suitable. The interview will take approximately one hour. I will also be asking you to sign a consent form regarding this event.

Neither you nor your organisation will be identified in the thesis. I will be recording your contribution and will provide a transcript for you to check before data analysis is undertaken.

You will have the opportunity to modify your responses or to withdraw any responses for a ten day period after you receive the transcript. I do hope that you will agree to take part and that you will find this participation of interest. If you have any queries about the project, you may contact my supervisor at Unitec Institute of Technology.

My supervisor is Alison Smith and may be contacted by email or phone.

Phone: (09) 815 4321 ext 8411

Email asmith@unitec.ac.nz

Yours sincerely

Jo-Anne Bisset

UREC REGISTRATION NUMBER: (2014-1058)

This study has been approved by the Unitec Research Ethics Committee from (1/7/14) to (1/7/15). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

APPENDIX B- Focus Group information



INFORMATION SHEET

Title of Thesis: The Move to Modern Learning Environments

My name is Jo-Anne Bisset. I am currently enrolled in the Master of Educational Leadership and Management degree in the Department of Education at Unitec Institute of Technology and seek your help in meeting the requirements of research for a Thesis course which forms a substantial part of this degree.

The aims of my project are to

1. -To define and describe what comprises a 'Modern Learning Environment' in the New Zealand 21st century secondary school context;
2. -To identify and critically examine the elements of 'Modern Learning Environments' that are being implemented in three secondary schools in New Zealand;
3. -To identify the pedagogical changes that have occurred as a result of teaching and learning in a 'Modern Learning Environment' in these three schools.

I request your participation in the following way.

I will be conducting focus group interviews on the 8/8/14 and would appreciate your contribution as a member of the group. The focus group will take approximately one hour. I will also be asking you to sign a consent form regarding this event. This consent form will contain a clause that states the focus group participants agree to keep any discussions confidential, within the group.

Neither you nor your organisation will be identified in the thesis. I will be recording your contribution and will provide a summary of the findings for you to check before data analysis is undertaken. I do hope that you will agree to take part and that you will find this

participation of interest. If you have any queries about the project, you may contact my supervisor at Unitec Institute of Technology.

My supervisor is Alison Smith and may be contacted by email or phone.

Phone: (09) 815 4321 ext 8411

Email asmith@unitec.ac.nz

Yours sincerely

Jo-Anne Bisset

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APPENDIX C – Adult Consent forms



CONSENT FORM - ADULTS

DATE

TO: [participant's name]

FROM: Jo-Anne Bisset

RE: Master of Educational Leadership and Management

THESIS TITLE: The Move to Modern Learning Environments in New Zealand Secondary Schools.

I have been given and have understood an explanation of this research and I have had an opportunity to ask questions and have had them answered. I understand that neither my name nor the name of my organisation will be used in any public reports. I agree to keep all matters discussed in the focus group confidential. I also understand that I will be provided with a transcript (or summary of findings if appropriate) for checking before data analysis is started and that I may withdraw myself or any information that has been provided for this project up to ten days after receiving this transcript.

I agree to take part in this project.

Signed: _____

Name: _____

Date: _____

UREC REGISTRATION NUMBER: (2014 - 1058)

This study has been approved by the Unitec Research Ethics Committee from (1/7/14) to (1/7/15). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

APPENDIX D – Interview Questions

Questions for Interviews -Opening: Firstly I want to thank you so much for agreeing to be part of this interview. I am an Assistant Principal myself and so I know how hectic life is and I really appreciate you giving up your time to take part in this interview.

Secondly I just want to assure you that your responses will be totally confidential, including the schools' identity. I will be, with your permission, recording your responses on this Dictaphone and also taking some notes, so that I can accurately transcribe what you tell me. I am more than happy to send you this transcription so that you can edit your responses in any way before I use them. So please, just relax and I am very grateful that you are willing to share your knowledge with me.

Starter: So firstly, just a little about me. The reason that I have chosen to focus on Modern Learning Environments for my thesis, is because my own college is going to be transformed in to a Modern Learning Environment because of seismic and water-tightness issues. Rather than 'pouring' money into old buildings, the Ministry of Education is looking at a plan that will probably involve a mixture of a rebuild and a refurbishment of my college and the establishment of Modern Learning Environments. I am particularly interested in looking at schools that have been operating as a MLE and talking with you about this.

Opening: Can you tell me a little about your 'story' as a college? When, how and why did your college decide to operate as a MLE?

1. In your opinion, what comprises (or makes up) a MLE? (Can you describe it?)
2. What elements of a MLE are being implemented in the school? (Or does it tend to just operate as a large, regular classroom?)
3. Can you tell me about the way the school has altered any structures because of the MLE? (For example are departments grouped together traditionally? Or are period lengths or timetables different to a 'traditional school?')
4. What is different for staff who teach in a MLE? Can you tell me about the positives and negatives?
5. What training or Professional Development do staff get, or need, to teach in a MLE?
6. What things do you see happening with students as learners in a MLE?
7. How motivating is it for students working in a MLE as opposed to a traditional classroom? Do they need to have different skills?
8. How has your school managed technology access in the MLEs?
9. How important are the relationships between staff and between students and staff in an MLE?
10. What challenges has an MLE setting provided for the school?
11. Do you believe that MLE's have affected the learning outcomes for your students and how do you know?

APPENDIX E – Focus Group Questions

Questions for Focus Groups

Opening: Firstly I want to thank you so much for agreeing to be part of this interview. I am an Assistant Principal myself and so I know how hectic life is and I really appreciate you giving up your time to take part in this interview.

Secondly I just want to assure you that your responses will be totally confidential, including the schools' identity. I will be, with your permission, recording your responses on this Dictaphone and also taking some notes, so that I can accurately transcribe what you tell me. So please, just relax and I am very grateful that you are willing to share your knowledge with me.

Starter: So firstly, just a little about me. The reason that I have chosen to focus on Modern Learning Environments for my thesis, is because my own college is going to be transformed in to a Modern Learning Environment because of seismic and water-tightness issues. Rather than 'pouring' money into old buildings, the Ministry of Education is looking at a plan that will probably involve a mixture of a rebuild and a refurbishment of my college and the establishment of Modern Learning Environments. I am particularly interested in looking at schools that have been operating as a MLE and talking with you about this.

Opening: Can we just please go round and can you tell me a little about yourself, your role in the school, and your involvement with the Modern Learning Environment.

1. My first question is in your opinion, what comprises (or makes up) a MLE? (Can you describe it?)
2. What elements of a MLE are being implemented in the school? (Or does it tend to just operate as a large, regular classroom?)
3. What is different for staff who teach in a MLE? Can you tell me about the positives and negatives?
4. What training or Professional Development do staff get, or need, to teach in a MLE?
5. What things do you see happening with students as learners in a MLE?
6. How motivating is it for students working in a MLE as opposed to a traditional classroom? Do they need to have different skills?
7. What challenges has an MLE setting provided for the school?

Extra questions: (time permitting)

8. Do you believe that MLE's have affected the learning outcomes for your students and how do you know?
9. What would be useful to know about a MLE if you were in charge of building a school?
10. Is the behaviour of students different in a MLE?