

**Teaching together, working together, and being together:
Teacher collaboration in Innovative Learning Environments**

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Abstract

For New Zealand primary school teachers, the spatial transition from traditional to Innovative Learning Environments (ILEs) also contains an underlying assumption that increased pedagogical and professional collaboration will be commensurate. However, for many teachers, collaboration has previously constituted a ‘visited activity’, conducted away from the interface with students and the act of teaching, providing little experience upon which to draw. Working through theoretical perspectives on both teacher collaboration and educational space, and within the case study context of early-adopter primary schools, this thesis contributes to educational research by investigating and analysing the theoretical background, conceptual underpinnings, and enacted experiences, of teachers collaborating in ILEs.

The study uses data collected from qualitative semi-structured interviews with individuals and groups, practice observations, and documentation to produce four major findings. Firstly, insights into the nature of teacher collaboration in ILEs, according to how they have been envisioned, rationalised and realised. Secondly, insights into enacted approaches to teaching and learning in ILEs, highlighting four factors: pedagogical intention, collaborative practices, joint teaching strategies, and structural components e.g. shared language. Thirdly, demonstrated links between teacher collaboration and space, found to be a profoundly spatial phenomenon that is experienced via multiple proximities, relationalities, and visibilities. Fourth and finally, a model through which to support the theorisation of teacher collaboration in ILEs: Terrains of teacher collaboration in primary school ILEs. This model theorises that teacher activities are the product of working together, teaching together, and being together. It highlights the nature of the terrain between rhetoric, rationale, and implications, and the everyday realities of enactment. Here the imperative is one of explication – and the need to make explicit the implicit.

The study provides important implications for educational theory and practice. Practically, the findings assist school leaders and teachers to recognise, reflect on, and respond to aspects of teacher collaboration in ILEs. The study provides language and a model through which to assist this professional learning. Theoretically it draws attention

to the centrality of space and spatiality in teacher collaboration and forms a starting point from which to begin further theoretical work.

Declaration

I declare that this thesis comprises only my original work towards the Doctor of Philosophy degree except where indicated in the front matter or acknowledged in the text. The thesis is fewer than 100,000 words, exclusive of tables, figures, references, and appendices. The research was conducted with the approval of the University of Melbourne Human Research Ethics Committee (HREC Project ID: 1646371).

Christopher John Bradbeer

Preface

Throughout my candidature I have been encouraged to present and publish. Opportunities to do both have helped develop my thinking, extend my analysis, and work on my writing. The following appeared as book chapters or conference proceedings during the course of the research. Links between the publication and the thesis are explained below each reference.

The following peer-reviewed articles, chapters, and conference proceedings presented material from this research:

Bradbeer, C. (2015b). 'Finished beginnings': Finding space for time in collaborative teacher practice. In W. Imms, B. Cleveland, H. Mitcheltree, & K. Fisher (Eds.), *Terrains 2015 Mapping learning environment evaluation across the design and education landscape: Towards the evidenced-based design of educational facilities Symposium proceedings* (pp. 43-51). Melbourne, Australia: University of Melbourne.

This paper explored the ideal of teacher collaboration in innovative learning environments in terms of relational and temporal complexity. The paper drew on data collected during Phase 1 of the study. It contributed towards the findings explained in Chapter 4 and subsequent discussion in Chapter 7.

Bradbeer, C. (2016b). I can see clearly now the wall is gone: Situated professional learning in a collaborative Innovative Learning Environment. In H. Mitcheltree, B. Cleveland, & W. Imms (Eds.), *What's working? Informing education theory, design and practice through learning environment evaluation Symposium proceedings* (pp. 55-64). Melbourne, Australia: University of Melbourne.

This paper explored the idea of teacher visibility as a spatial phenomenon associated with teacher collaboration in innovative learning environments. The paper drew on data collected at one of the case sites during Phase 2 and 3 of the study. It contributed towards the findings explained in Chapter 5 and 6, and subsequent discussion in Chapter 7.

Bradbeer, C. (2016d). Working together in the space-between: Pedagogy, Learning environment and teacher collaboration. In W. Imms, B. Cleveland, & K. Fisher (Eds.), *Evaluating learning environments: Snapshots of emerging issues, methods and knowledge* (pp. 75-90). Rotterdam: Sense.

This book chapter formed an early opportunity to explore key areas of literature connecting learning environments and teacher collaboration. The material contributed towards the literature review in Chapter 2. The chapter also outlined the research process according to three Phase research process reported in Chapter 3.

Bradbeer, C. (2017b). Into the great wide open: Navigating teacher opportunity, autonomy and structure in a collaborative Innovative Learning Environment. In W. Imms & M. Mahat (Eds.), *Transitions: Inhabiting innovative learning environments Symposium proceedings* (pp. 67-72). Melbourne, Australia: University of Melbourne.

This paper looked at how teacher organisational and pedagogical structures designed by teachers to support the enactment of collaboration in innovative learning environments could either enable or limit aspects of practice. The paper drew on data collected at one of the case sites during Phase 2 of the study. It contributed towards the findings explained in Chapter 5, and subsequent discussion in Chapter 7.

Bradbeer, C. (2018b). Enacting teacher collaboration in innovative learning environments: Reifying pedagogical ‘ownership’. In W. Imms & M. Mahat (Eds.), *Transitions 18 Continuing the conversation Symposium proceedings* (pp. 73-78). Melbourne, Australia: University of Melbourne.

This paper looked at aspects of professional ‘ownership’ apparent in collaborative contexts in innovative learning environments, often contrasting with teacher experience in traditional classroom situations. It drew on data collected at three of the Phase 2 case sites. It contributed towards the findings explained in Chapter 5 and subsequent discussion in Chapter 7.

The following conference papers presented material from this research:

- Bradbeer, C. (2015a). *'Finished beginnings': Finding space for time in collaborative teacher practice*. Paper presented at the Terrains 2015 Research Symposium, Melbourne, Australia.
- Bradbeer, C. (2016a). *I can see clearly now the wall is gone: Situated professional learning in a collaborative Innovative Learning Environment*. Paper presented at the 2016 LEaRN International Graduate Research Symposium, Melbourne, Australia.
- Bradbeer, C. (2016c). *Understanding and fostering collaboration to ensure innovative learning environments thrive*. Paper presented at the New Generation Learning Spaces, Melbourne, Australia.
- Bradbeer, C. (2017b). *Into the great wide open: Navigating teacher opportunity, autonomy and structure in a collaborative Innovative Learning Environment*. Paper presented at the Transitions 2017 Research Symposium, Melbourne, Australia.
- Bradbeer, C. (2017d). *Teacher collaboration in innovative learning environments*. Paper presented at the ULearn Conference, Hamilton, New Zealand.
- Bradbeer, C. (2017e). *Teaching and learning in innovative learning environments: Reality or rhetoric?* Paper presented at the Hawkes Bay Primary Education Research Symposium, Hawkes Bay, New Zealand.
- Bradbeer, C. (2018a). *Enacting teacher collaboration in innovative learning environments: Reifying pedagogical 'ownership'*. Paper presented at the Transitions 18 Research Symposium, Phoenix, AZ.
- Bradbeer, C. (2019). *Together in the space-between: Teacher collaboration and innovative learning environments in New Zealand primary schools*. Paper presented at the NZARE: Learning Environments SIG Symposium, Hamilton, New Zealand.

Acknowledgements

From the outset, the motivation for undertaking a PhD was to further my learning. Now, reflecting on the eight years it has taken to accomplish, my learning appears to have been threefold; about the original field of inquiry, the process of learning, and about myself as a learner. The combination of the three has ensured the endeavour has been an utterly invaluable one.

The PhD has not been accomplished alone. I have been blessed with significant support, and for that, I am immensely grateful.

To my supervision team of Associate Professor Wes Imms and Dr Ben Cleveland, assisted by Academic Chairs, Professor David Beckett and Associate Professor Patricia Eadie. I am immensely indebted to you for your commitment, critique, provocation, generosity, reassurance, and belief. Your mentorship has ensured that what began as likely a ‘good idea’, has finally come to fruition. Sincerely, thank you.

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To the principals, teachers and children who agreed to be involved in the project, I extend a heartfelt thank you. I have learned much from you and am committed, in return, to ‘paying it forward’ to our educational community. I hope this research will contribute in some way.

Thank you also to Teach NZ. I was fortunate to be a scholarship recipient in 2015, which enabled me to spend a year in schools across the country, gathering data.

The broader network of connections that has grown out of an interest in this area has thoroughly enriched my experience, understanding, and learning. My thanks in particular to colleagues and connections made through the Learning Environments Applied Research Network (LEaRN), Innovative Learning Environments and Teacher Change project (ILETC), and Learning Environments Australasia (LEA). I know my scholarship has been considerably amplified as a result.

To family and friends both close and afar, thank you for your patience, confidence, and inspiration. You have kept me grounded and on track, and I have appreciated it enormously. A particular thank you to Clive Stone, and the late Bill Kelly. I have deeply valued your friendship, wisdom, and counsel over the years.

When not studying or working, my preference has always been to spend time walking in the hills with Jo. Notably, making our way along the 3000km path of Te Araroa, connecting the furthest ends of New Zealand over multiple summers. It was a journey we began in 2012 and completed in January of this year. Time and space on the trail have provided welcome perspective, constantly changing scenery, and extended time for reflection. It transpires that these two parallel pursuits – walking and research – hold some distinctly similar characteristics. Not least, as Gros (2015) reminds us, because “discipline is the impossible conquered by the obstinate repetition of the possible” (p. 158). It has proven to be a useful mantra during the tough stretches on both journeys.

To Jo, I extend my sincerest respect, warmest gratitude, and most profound love. We have journeyed from one end of New Zealand to the other; now from one end of a PhD to the other too. I know I would not have got to the end of either without you.

Jo, I dedicate this to you.

Chris Bradbeer

Auckland, New Zealand

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Abbreviations

ABW	Activity Based Work
AP	Associate/ Assistant Principal
CTE	Collective Teacher Efficacy
DP	Deputy Principal
ECE	Early Childhood Education
ESOL	English for Speakers of Other Languages
FLS	Flexible Learning Space
ICT	Information Communication Technology
ILE	Innovative Learning Environment
MoE	Ministry of Education (NZ)
NZC	New Zealand Curriculum
OECD	Organisation for Economic Cooperation and Development

Chapter 1

Introduction

1.1 Introduction

This thesis reports on a study connecting two fields of knowledge embedded within contemporary educational discourse: learning spaces and teacher collaboration. Specifically, it explores the context, conceptualisation, and enactment of teacher collaboration as an embedded socio-spatial requirement paralleling and intersecting with the large-scale adoption of Innovative Learning Environments (ILEs) in New Zealand schools. The research was carried out as a collective instrumental case study (Stake, 1995), conducted with a set of expert informants, and six primary schools in New Zealand with Innovative Learning Environments.

This first chapter presents the background to the study, states its focus and aims, and the research questions. It then outlines the scope of the study and describes the background of the researcher. The chapter concludes by outlining the thesis structure.

1.2 Background to the study

Set in a context of complex global transformation, shifting educational priorities, and advancing pedagogical understandings, schools are increasingly being called upon to provide students with learning, teaching, curricula and experiences that have relevance in a contemporary world. Although mainstream education has only relatively recently undertaken a ‘spatial turn’ (Gulson & Symes, 2007a), the role that space may play in supporting teachers and school systems to meet these emerging educational imperatives has emerged as a rapidly developing discourse internationally and in Australasia, and been supported by governments through significant infrastructure investment (Barrett & Zhang, 2009; Benade, 2017b; Dumont, Istance, & Benavides, 2010a; Jones, 2016; Ministry of Education, 2011, 2014, 2016c, 2016d; OECD, 2008, 2011, 2013, 2015).

The conceptualisation of Innovative Learning Environment (ILEs) (Dumont et al., 2010a; OECD, 2008, 2011, 2013, 2015), to describe broader ecosystems of learning, and embedded ‘Flexible Learning Spaces’ (FLSs) (Ministry of Education, 2016b) denoting distinct clusters of spatial functionality, are terminologies and concepts that

have become increasingly utilised in literature about educational space in New Zealand (see for example Ministry of Education, 2011, 2016). Often, ILEs are described according to qualities of openness, size (commonly home to 2 to 4 teachers with cohorts of up to 120 students), flexibility, and adaptiveness to possible pedagogical scenarios. ILEs are envisaged to help operationalise innovative practices, student agency and teacher collaboration (Benade, 2017c; Charteris & Smardon, 2017; Dovey & Fisher, 2014; Ministry of Education, 2011; OECD, 2013). Dovey and Fisher (2014) portray them as fluid, up-scaled socio-spatial assemblages; pertaining to, “the flows of life, people, materials and ideas that give the learning cluster its emergent potential” (p. 8). Fluidity, as Dovey and Fisher (2014) suggest, being “a property identified with the multiplicitous practices of student-centred learning” (p. 19). By comparison with traditional classrooms, ILEs have no ‘front’ (Cleveland, 2011), or at least a less identifiable one, along with clusters of settings (including classroom size spaces) and zones for particular learning activities (Fisher, 2005a). The implication is that teachers and students may move fluidly between settings according to learning activity in much the same way that Activity Based Work (ABW) theory is enacted in the integrated corporate workplace (Van Marrewijk, 2009).

Theoretically, the absence of a ‘front’, along with co-location of teachers in ILEs, renders the traditional ‘built pedagogy’ (Monahan, 2005) of the classroom – how school buildings produce and reinforce sets of social relations – potentially less overt. ‘Classrooms’, conceived in an era that prioritised the dissemination of knowledge and saw students more as ‘passive bodies’ (Foucault, 1977), embodied a space for teaching and learning which, by default, optimised settings for high levels of professional autonomy within relatively private and isolated physical domains (Clandinin & Connelly, 1996; DuFour, 2011; Elmore, 2012; Flinders, 1988; Horn, 2008; Lortie, 1975; Monahan, 2002). Consequently, an implicit dissimilarity from a traditional classroom model is the way space and place are conceptualised in ILEs. With ILEs emerge alternate possibilities of social structure, spatiality and power (McGregor, 2004b). Another consequence is that given the historical prevalence of individual classroom spaces in primary schools, changes to socio-spatial settings demand new competencies of teachers – especially with respect to teachers working together (see for example Alterator & Deed, 2013; Campbell, 2019; Cardellino & Woolner, 2019; Cleveland, 2011; Cox & Edwards, 2014; Deed & Lesko, 2015; Deed, Lesko, & Lovejoy, 2014;

Lackney, 2008; Saltmarsh, Chapman, Campbell, & Drew, 2015; Woolner, Clark, Laing, Thomas, & Tiplady, 2012).

In principle, ILEs afford a professional context within which a team of teachers are envisaged to work collaboratively, teach in a strength-based manner, adopt a higher degree of collective pedagogical variation, and as a result, better meet the needs of learners (OECD, 2013). Regularly determined to have a significant and sustained impact on school improvement, teacher collaboration has long been viewed as a powerful component of educational change. Hence policymakers, educationalists, and school leaders have been calling upon increased collaboration to support the development of teacher efficacy, pedagogical quality, and systemic professional transformation (Donohoo, 2017; Eells, 2011; European Commission, 2013; Fullan & Langworthy, 2014; Goddard, Hoy, & Hoy, 2000; Hargreaves & Fullan, 2012; Hargreaves & O'Connor, 2017, 2018; Hattie, 2015b; Leana, 2011). Furthermore, in the context of an increasingly networked world, collaboration is viewed as a growing imperative, and a valuable dispositional and knowledge set for students to learn at school. To do this effectively, as teachers, we need to 'practice what we preach' (Coke, 2005), and model collaboration within school settings.

In practice, however, as Hargreaves and O'Connor (2017) determine, the level and relative success of previous collaborative strategies in schools has ebbed and flowed, resulting in the conclusion that, "not all forms of collaboration are equally strong, desirable, or impactful" (p. 77). Research into teacher collaboration highlights that much of what is articulated in schools as collaboration has often related to collegiality instead; collegiality focused on the nature of relationships between teachers, rather than the activities they are engaged in (Barth, 1990; Datnow, 2011; Hargreaves, 1994; Kelchtermans, 2006). Instead, effective collaboration has been shown to be contingent on purpose, process and participation (Gajda, 2004; Gray, 1989; Thomson & Perry, 2006; Wood & Gray, 1991). In the school setting, therefore, it presents a novel way of working for many teachers and brings with it associated opportunities and challenges (Achinstein, 2002; Cook & Friend, 1991; Datnow, 2018; Datnow, Park, & Kennedy-Lewis, 2013; Glazier, Boyd, Bell Hughes, Able, & Mallous, 2017; Meirink, Imants, Meijer, & Verloop, 2010; Vangrieken, Dochy, Raes, & Kyndt, 2015; Welch, 1998). The translation and mitigation of both would appear critical in a professional

spatial setting which, on the face of it, subsumes collaboration to be happening in order to achieve its desired goals.

The study investigates teacher collaboration in ILEs in primary school contexts in New Zealand, an area of substantial Ministry of Education investment across the country.¹ The investment brings with it an equally substantive requirement for deeper understanding and evidence. To date, there is very little research within education on the topic of teacher collaboration and space. Although previous studies have touched on it, it has not constituted a central focus of research. As such, teacher collaboration in ILEs presents what Creswell (2013) might refer to as a “timely topic” (p. 68).

1.3 Focus and aim of the study

This study sets out to connect two fields of knowledge embedded within the discourse of contemporary educational thinking – learning environments and teacher collaboration – jointly encapsulated in the context of ILEs in New Zealand primary schools. It aims to contribute to educational research by investigating and analysing the theoretical background, conceptual underpinnings, and encountered enacted practices, of teacher collaboration in ILEs. In doing so, it presents insights into the nature of teacher collaboration in ILEs, enacted approaches in ILEs, and the relationship between teacher collaboration and space in this context. Although this is a study about teachers and the way they work together, it is also a study about the spaces within which this happens.

1.4 Scope of study

The study focused on phenomena that could be defined and investigated in several ways. The scope is described here at the beginning of the study in order to place the findings in context. As such limitations to the research are summarised below. They are also documented and discussed throughout the thesis. In combination with the findings, these mark out frontiers for future research.

¹ Much of the investment has come in the wake of the Canterbury earthquakes in 2010 and 2011. Also that precipitated by refurbishment and rebuilding of ‘leaky’ school buildings caused by material and quality issues, as well as the requirement for multiple new schools to accommodate population growth.

- The study focuses on an exploration of the phenomena of teacher collaboration in ILEs rather than on the implementation of either ILEs and/or collaboration.
- The study is developed in the New Zealand context, although it draws heavily on spatial and collaboration research conducted in Europe, the United States and Australia. Although parallels may well be evident in other contexts, the findings centre on observations and data collected in New Zealand.
- The study focuses on teacher collaboration in ILEs as a case study in order to illuminate aspects of the phenomenon. Although the study utilised six ILEs, they do not form an exhaustive inventory of possible scenarios.
- The study focuses on primary schools rather than secondary schools. While conceptual and theoretical parallels may be drawn, the findings may not be immediately applicable in the secondary context.

1.5 Background of the researcher

My research engagement in ILEs, and specifically the connection with teacher collaboration, emerged initially from my role as foundation Associate Principal at Stonefields School in Auckland. The opportunity to help develop a vision for teaching and learning, build teacher capacity to raise student achievement levels, and to consider what might be possible in a new school, provided much of the motivation for a research interest in learning environments. In addition, an interest in the relationships between pedagogy and space prompted the development of a blog, a professional learning group, and subsequently a role in establishing *Learning Environments New Zealand*, (part of an international association aimed at promoting quality design and professional development amongst a community of architects, educators and decision-makers). I became Chair, *Learning Environments Australasia* (LEA) (2018-2020), advocating for a focus on quality design, research and professional development

I also took on a Research Fellow position (part-time) at The University of Melbourne working on the Australian Research Council Linkage Project (LP150100022) Innovative Learning Environments & Teacher Change (ILETC) 2016-2020: a large-scale internationally recognised project, investigating aspects of teacher transition into ILEs across Australasia and internationally. My role involved developing

connections with New Zealand schools and personnel within the Ministry of Education, as well as undertaking research for the project, and working with the PhD cohort of seven candidates.

This experience undoubtedly subjectifies the study, and this is something the reader needs to understand. However, this background, experience, and knowledge are understood to strengthen the overall approach and veracity of the study.

1.6 Structure of thesis

The thesis maps a journey from the beginnings mentioned briefly above through a research process methodically designed as an immersion into ‘space and teacher collaboration’. This thesis documents that developing knowledge.

Chapter 2 reviews relevant historic and contemporary, professional, pedagogical and theoretical research literature on context, space and teacher collaboration, in order to recognise, position, and relate the two concepts. The intention is to make gaps in the literature visible and to place the research within the field of inquiry. The review is divided into five sections examining, from the contextual to the fine-tuned:

1. Global context, drivers for broad-scale educational change, and the place of innovation in schools.
2. Thinking around the reconceptualisation of contemporary school space in light of incremental progressivism in the relationship between space and pedagogy in the New Zealand context.
3. Collaboration, through definitions, theories, frameworks and processes, perceived barriers and opportunities, evaluation of effectiveness, and relationship with space.
4. Connections between collaboration and teaching, through historical examples, interpretations, outcomes, and practices.
5. Connections between teacher collaboration and space, including spatial alternatives that have brought teachers into closer physical proximity, specifically team-teaching and co-teaching, and how teachers are adapting to collaboration in new socio-spatial settings.

Chapter 3 outlines the ontological and epistemological assumptions, methodology and methods utilised in the study, alongside data analysis techniques

employed. In addition, participants and sites, along with how they were selected, are detailed. The chapter aims to achieve transparency of the research process.

Chapters 4, 5 and 6 report findings of the study. The structure follows a methodological logic necessitating an understanding of the ‘big picture’ first, then the details within, out of respect for the myriad practices of countless expert teachers in these spaces. It has intentionally navigated towards practice models perceived to be successful (Brinkerhoff, 2003), to more fully understand the phenomenon of teacher collaboration in the context of ILEs.

Chapter 4 details the first phase of the study and looks particularly at understanding the nature of ILEs and teacher collaboration in the New Zealand primary school context. Reporting on data collected through a set of expert participant interviews it identifies beliefs underpinning a move towards collaborative teaching and learning spaces, as well as resultant implications. Chapter 5 explores enacted practices in six collaboratively taught primary school ILEs. It outlines enacted practices as a set of teaching, organisational and logistical, spatial, and relational factors. It concludes by developing a model to frame the subsequent phase of research. Chapter 6 presents findings from Phase 3 of the research, utilising the model of enactment to describe aspects of teaching together, working together and being together, across three research sites.

Chapter 7 contains discussion centring on the four subsidiary research questions. Each are considered in turn and discussed in terms of significant findings as related to the literature on the development of ILEs, collaboration, collaborative pedagogical practice, and contemporary pedagogy. This chapter concludes with an assessment of the presence and positioning of collaboration as ‘happening, valuable, and difficult’ (Huxham, 1996).

Chapter 8 presents conclusions, implications, and directions for further research. It presents an overview of the study and discusses the implications for practice and theory. It concludes with an analysis of contributions to the field contributions made to the field, and directions for further research.

1.7 Conclusion

This opening chapter provided an overview of the broad context for the study. It outlined the focus and aims, and described the scope of the research. It also provided background to the researcher. The chapter concluded with an overview of the thesis structure. Chapter 2, which follows, reviews relevant historic and contemporary literature about professional, pedagogical and theoretical research into (a) learning environments, and (b) teacher collaboration.

Chapter 2

Approaches to learning, school spaces, and the emergence of teacher collaboration in Innovative Learning Environments:

A literature review

2.1 Introduction: Mapping the review

The literature review, presented in five sections, maps relevant historic and contemporary, professional, pedagogical and theoretical research on learning environments and teacher collaboration, to recognise, position, and relate these two concepts. The first section establishes context and background stimulating contemporary educational change. It draws attention to the broad context, key global factors, which, taken together emphasise requirements for reflection, relevance and practice change at a local level; in sum, a discourse contesting predominant models of roles in, and environments for, learning and teaching. These are summarised through concepts of educational innovation and what Hess and Meeks (2010) refer to as ‘unbundling’.

The second section, Incremental progressivism in New Zealand primary school space design and the emergence of the ILE, examines the thinking that has led to the reconceptualisation of school space in New Zealand. In particular, it reflects on the single teacher/ single classroom association that has traditionally formed part of the predominant “grammar of schooling” (Tyack & Tobin, 1994). The classroom, conceived by Leander, Phillips, and Taylor (2010) as the “epitome of immobility” (p. 332), portrays a default spatial metaphor, which stands solidly in the public imagination. Terms of affordances, socio-spatial assemblages, up-scaling and learning settings, critical to this discussion form what Bernstein (2000) referred to as ‘vertical’ knowledge structures, often the reserve of professional or scholarly knowledge, rather than the ‘horizontal’ structures of everyday knowledge. The review then references historical developments in school space design, identifying pedagogical affordances (Gibson, 1977) presented by the provision of contemporary Innovative Learning Environments. This is accomplished through studies conducted in the New Zealand context, although there is recognition of a paucity of such literature in this field (Ministry of Education, 2016c), and overseas. The section approaches the discourse through the critical concept

of *built pedagogy*, or “architectural embodiments of educational philosophies” (Monahan, 2002, p. 5), used here as a way of making meaning in the space between societal influencers and design intentions, and illustrating the role environment plays in conveying meaning regarding embodied educational philosophy. The entire discourse is predicated on the idea that space, and how it impacts at a human level, is significant.

The review then turns to collaboration as a concept. The third section, investigates definitions, theories, frameworks and processes of collaboration, along with perceived barriers and opportunities. Necessarily, it draws on literature sitting outside the educational field, often in the business, health and non-governmental agency literature. Here the review looks at the imperative for collaboration and identifies universal principles. Drawing mainly on the fields of workplace, it investigates the relationship between the discourses of complex global, so-called ‘wicked problems’ (Rittel & Webber, 1973) and the desire for collaborative solution finding (Gray, 1989).

Next, collaboration is unpacked in its applied sense. Section four of the review draws on historical examples of teacher collaboration and of collaborative culture (for example Little, 1982), and examines multiple ways in which collaboration has been conceptualised and understood at a teacher level. It looks particularly at identifying the value attributed towards collaboration, and the ways this has manifested in schools. It reflects on the impact and implications of teacher collaboration on teachers and highlights opportunities and challenges encountered as a result. Furthermore, the review conceives of much teacher collaboration as having constituted a ‘visited’ activity, sitting collaboration aside from the work that teachers accomplish at the interface with students.

Far from being a new phenomenon, section five synthesises teacher collaboration and space and charts previous attempts at spatial alternatives that have brought teachers into closer physical proximity, specifically team-teaching and co-teaching approaches, before investigating how teachers are adapting to collaboration in new socio-spatial settings. The review investigates the impact on principles of teacher identity, student belonging, spatial independence, autonomy and power, so associated with individual classroom and teacher practice.

This review structure follows the refinement of literature analysis advocated by Boote and Beile (2005), aiming to provide subsequent research with purposeful and

useful “foundation and inspiration” (p. 6) for the study. It sets out to achieve several goals: to clearly situate the study within a broader field of scholarly literature; to examine the pertinent historical and contemporary literature critically; to note ambiguities in the literature and to offer a fresh perspective (Hart, 1998); to elucidate the practical significance of the current work; and to help identify the research questions. Also, the review draws attention to previous methodological techniques applied and discusses their relative merits. Its success might best be judged on the extent to which it delivers to the reader a moment of clarity, which suggests, ‘yes, this is the right study to be doing at this moment’ (Rudestam & Newton, 2014).

The review begins by mapping the context influencing educational, spatial and pedagogical change.

2.2 Context for educational change

Schools are familiar places: eidetic in memory, rarely confusable in form, and elemental in shaping consciousness, behaviour and attitudes (Burke & Grosvenor, 2008; Hutchison, 2004). They convey messages of permanence and place; and to some security, stimulation and identity (Lawson, 2001). However, educationalists, researchers and school leaders have consistently expressed doubts that previously constructed schooling experiences will equip today’s students for their futures (Ananiadou & Claro, 2009; Cobo, 2013; Cope & Kalantzis, 2008; Fullan & Langworthy, 2014; Gilbert, 2005; Monahan, 2005; Trilling & Fadel, 2009; Zhao, 2011).

What has changed is context; and that, to paraphrase Postman (1996), ‘changes everything’. Specifically he was referring to technology, and the impact he could foresee occurring in schools. More broadly though, his comment can be utilised in the current discourse on the future of learning, education, the place of school, and to help locate contemporaneous (educational) priorities and responses. As a precursor to the main review, this macro-scale context is material and relevant. The intention here is not to supply an exhaustive and critical analysis regarding contemporary approaches to teaching and learning or factors contributing towards it. There is simply not room. Moreover, it is beyond the scope of thesis to do so. Instead the intention is to provide a brief round up of pertinent ideas and themes running through educational discourse, particularly those contributing to conversations regarding spatial change. This section

therefore serves to set the scene on which spatial change, and the requirement for teacher collaboration is overlayed. Unpacking this broader discourse – which perhaps could be entitled ‘why are we learning here’ – aims to map the terrain for forthcoming discussion.

2.2.1 Global forces, great accelerations, and ‘wicked problems’

At macro-scale Friedman (2016) demonstrates how post-industrial megatrends – technology, globalisation and climate change – exert transformative power on everyday lives. Each is developing in accelerated ways; each is consistently reshaping society, geopolitics, and workplace; each presents opportunities and challenges for education.

Firstly, advances in technology have resulted in the proliferation and compaction of devices Moore (1965). Alongside them come new conceptions of locating, viewing, sharing, accessing, interacting, friendship, privacy and truth (Kelly, 2016). Secondly, globalisation – the growing “ability of any individual or company to compete, connect, exchange, or collaborate globally” (p. 119) – is accompanied by the emergence of alternate models of consuming, engaging, connecting and interchanging goods, products and services. Ostensibly, globalisation has made the world smaller. Thirdly, ecological change, readily illustrated through destruction of tropical forest, depletion of marine life, increased carbon dioxide, and rise in ocean levels, is pushing biophysical boundaries beyond previously understood parameters (Diamond, 2005; Friedman, 2016; Steffen, Broadgate, Deutsch, Gaffney, & Ludwig, 2015). For Diamond (2005), the consequences of ecological change, if unchecked, are disturbing but “will get resolved, in one way or another, within the lifetimes of the children and young adults alive today” (p. 498). To Friedman (2016) all three megatrends hold significance for education. Particularly in terms of the capacity for education to adapt and keep pace with change, but also in terms of expectations on schools to develop ways of learning which will help society come to terms with and address global issues.

To Rittel and Webber (1973) such issues are *wicked* societal problems. Wicked problems are those lacking a clear understanding of what the problem is, those requiring open-ended solutions, and those in situations of frequent flux due to changing conditions and interests. They are ill-defined, polemic, multi-dimensional, multi-disciplinary, ungeneralisable, lack a logic that systematic thinking would bring to something simpler, and may also transmute into additional problems. Furthermore they

may stray into political, environmental, moral, value-laden, and ethical issues (Frame & Brown, 2008; Head & Alford, 2015; Rittel & Webber, 1973; Roberts, 2000). The idea a generation of children will face a future of wicked societal problems (see for example United Nations, 2015) forms a recurrent narrative flowing through the discourse on future needs of society and education.

Researchers have described the challenges facing education as being similarly ‘wicked’, and have highlighted the need for systemic support in understanding the type of education and capabilities required of learners today (Bolstad, Gilbert, McDowall, Bull, & Hipkins, 2012; Cherry, 2005; Fadel, Bialik, & Trilling, 2015; Trilling & Fadel, 2009). For Bolstad et al. (2012):

Doubts about the ability of existing paradigms to solve current social, environmental and economic challenges mean that a future-focused education system must provide learners with past paradigms and the ability to think between, outside and beyond them—that is, the ability to work with a diversity of ideas. (p. 3)

The analysis offered by Bolstad et al. (2012) frames a direct challenge to the educational community; to recast [educational] thinking, structures, and policy with responsive, expansive, and proactive design solutions resolutely aligned to contemporary and prospective learning requirements, objectives and ideals. It alludes to the presence of a shift in paradigm, and the sequestration of a previous model. The notion of paradigm shift here refers to the idea established by Kuhn (1962), marking fresh understanding which no longer fits within commonly received frameworks, causing a significant change to an entire worldview. To Kuhn (1962) it is as if “the professional community had been suddenly transported to another planet where familiar objects are seen in a different light and are joined by unfamiliar ones as well” (p. 111). Such thinking has significant implications for education, not least those concerning the nature of knowledge, and how this translates into schools.

2.2.2 The changing nature of knowledge and its impact on learning

Although sometimes contested, educational history, national policies and curricula show a close association with contemporaneous understandings and articulations of knowledge and what is important to know (Apple, 1993; Beck, 2002;

Castells, 2010; Duhn, 2006; Edwards & Usher, 2000; Gilbert, 2005; Luckett, 2009; Male & Palaologou, 2015; Moore & Young, 2001; Pinar, Reynolds, Slattery, & Taubman, 1995; Quicke, 1999; Slattery, 2006). However, the transition from Industrial to Post-Industrial, or knowledge-based economies, constitute a significant pivot point in how knowledge is imagined and understood, leaving significant implications for schools (Gilbert, 2005). Gilbert (2005) describes the knowledge-based society as one in which “knowledge (or intellectual capital)... has replaced other more tangible assets like labour, land, and money as the key drivers of economic growth” (p. 24). In the process she differentiates between knowledge in its more traditionally considered compartmentalised form, and contemporary knowledge as more fluid – ostensibly a change from understanding knowledge as a noun to a verb. Where the former was based more on the “properties of things”, what is important now is the “systems, processes, people, and the relationships between things” (p. 30). Accordingly Gilbert (2005) describes the imperative for students to ‘know’, to know ‘how to do things with what they know’, as well as ‘how to learn how to learn’.

However, this has not necessarily been the role schools have performed with any great intentionality. Knowledge has habitually accompanied pedagogical frameworks by division into ‘fields’, appropriated by ‘subjects’, hierarchically distributed into a ‘timetable’, and assigned a proportionally prioritised part of the week; a factor influencing what Tyack and Tobin (1994) refer to as the “basic grammar of schooling” (p. 454). Arguably such a framework can be traced back to Prussian influenced models of early public education, which prioritised certain knowledge domains over others (Bunker, 1916); and with a view of intelligence as fixed, ‘unitary’ and ‘general-purpose’. Consequently, pedagogies emphasised a ‘conveyor-belt’ model of learning where students’ capacity for knowledge related to a large extent to how long they remained in the education system, closely replicating the worker/ manager hierarchy of the factory floor (Benade, 2017c; Gilbert, 2005). Research over the last few decades, however, shows intelligence can be considered composite, multiple, and multi-faceted (Gardner, 1993), as well as expandable (Claxton, 2008; Claxton & Lucas, 2010), each factor contributing to types of further learning and employment students may seek.

2.2.3 The ‘workplace imperative’

The workplace imperative – the broad notion school and higher education graduates will require more than technical expertise alone; to secure a job, to transfer successfully into subsequent ones, and to potentially carve out a niche for themselves – is a recurring theme through contemporary educational discourse; and often used as an argument and justification for educational change (Bowden & Marton, 2003; Fadel et al., 2015; Freeman, Adams Becker, Cummins, Davis, & Hall Giesinger, 2017; Robinson, 2009; Trilling & Fadel, 2009; Zhao, 2011). It is perhaps epitomised in the 2004 statement by Riley, United States Secretary of Education (under President Clinton), who suggested; “we are currently preparing students for jobs that don’t yet exist . . . using technologies that haven’t been invented . . . in order to solve problems we don’t even know are problems yet” (cited in Trilling & Fadel, 2009, p. 3).

A decade after Riley’s statement, Frey and Osborne (2013) assessed there were significant risks to the United States job market due to increased computerisation and automation. Particularly susceptible were low-wage, routine and non-routine tasks, such as those in transportation, logistics, administrative or office roles. Those less vulnerable would be those “requiring creative and social intelligence” (p. 45); two of a growing catalogue of skills, aptitudes, attitudes and competencies determined by the employment sector and regarded as desirable for students entering the workforce to possess, and to a greater or lesser extent have been absent in those leaving education (Casner-Lotto, 2006; UK Commission for Employment and Skills, 2014). Often these are defined as *soft skills*, “the intangible, nontechnical, personality-specific skills that determine one’s strengths as a leader, facilitator, mediator, and negotiator” (Robles, 2012, p. 457). Others include ‘growth mindset’, emotional intelligence, communication skills, teamwork, initiative, enterprise, problem-solving, integrity, work ethic, critical thinking, self-management, interpersonal skills, flexibility, entrepreneurship, global, ethical and, civic awareness (Dweck, 2006; Freeman et al., 2017; Goleman, 2006; Kusmierczyk & Medford, 2015; Ministry of Business Innovation and Employment, 2016; Robles, 2012; The Economist Intelligence Unit, 2017; Zhao, 2011).

As Robles (2012) notes soft skills are transferable from one context to another, although their association with character traits renders them “more difficult to acquire and change” (p. 458). Although she cites some evidence to support this, an industry of

mentoring, coaching and training argues they are entirely developmental and quantifiable (see, for example Lombardo & Eichinger, 2013). Similarly, the emphasis on them in contemporary educational discourse posits that they are entirely learnable. The Australian Government's *Core Skills for Work Developmental Framework* (CSfW) (Employment and Workplace Relations Department of Education & Innovation Climate Change Science Research and Tertiary Education Department of Industry, 2013) takes this stance and leverages from the Dreyfus and Dreyfus (1980) *Novice to Expert Model of Skills Acquisition* framework. The framework breaks down the performance of a particular skill from a novice, reliant on 'rules-based' behaviour, to an expert with "situational discriminations" (p. 179). For The Economist Intelligence Unit (2017) not only are these skills pertinent in the workplace but are the "types of skills current students will need to flourish in the world as adults" (p. 8), reflecting the idea learning is necessarily 'lifelong' (Schuetze, 2006). Furthermore, for Zhao (2011), in a globalised context where niche talents have much broader opportunities to be realised, "by forcing children to master the same curriculum, essentially discriminates against talents that are not consistent with the prescribed knowledge and skills" (p. 45). It is a scenario further reinforced by Robinson (2009) and Pink (2009).

Emerging from this discourse, and captured in the literature under the anachronism of '21st century learning', is a constructed conglomeration subscribing 'value' to particular aspects of knowledge and capability. Often this is in direct opposition to an approach formed around standardised assessment practices, uniformity, and subject-based curricula (Benade, 2017a). Hence critics such as Zhao (2011), contend models of schooling require significant changes in order to become relevant.

2.2.4 Learning in the 21st century

Questioning the relevance of schooling is not an entirely new conversation. In October 1967, Dean of the Graduate School of Education, University of California, John Goodlad, delivered a speech to the National Education Association of the United States, exploring the nature of learning (Goodlad, 1967). In it, he challenged an educational system that in his view, lacked potency, relevance, and intensity. He believed that success in school should depend less on grades and more on enculturating good work habits, finding fulfilment through learning, and growing citizenship and compassion. In sum, to provide what he saw as a more humanising education:

The most controversial issues of the twenty-first century will pertain to the ends and means of modifying human behaviour and, most of all, to who shall determine these ends and means. The first educational question will not be what knowledge is of most worth, but what kinds of human beings do we wish to produce. (p. 22)

As a construct, therefore, ‘21st century learning’ is somewhat problematic, especially given its continued usage some two decades into the century. Furthermore Kereluik, Mishra, Fahnoe, and Terry (2013) draws attention to ‘21st century learning’ constituting, “just another form of chronocentrism” (p. 127), the tendency to exaggerate the importance of our own time. For Kereluik et al. (2013) it has become “a term we all think we understand yet are hard-pressed to clearly define” (p. 127). As will be seen, though, this view of learning has influenced international educational policy, particularly in terms of curricula priorities. Hence, for Kress (2008) there is an urgent need to develop “theories of learning which are apt for these new givens” (p. 253), particularly when a given is that “instability provides no basis for predictability” (p. 256).

The meta-analysis by Kereluik et al. (2013) drew on fifteen “independent, high-visibility” (p. 129) frameworks and established three “realms of knowledge” (p. 130): *Foundational knowledge*, *meta-knowledge*, and *humanistic knowledge*; “what we need to know, how we act on that knowledge, and the values we bring to our knowledge and action” (p. 131). Each of these contained three sub-categories (see Table 2.1 below). In arriving at these categories Kereluik et al. (2013) identified two critical issues, both relevant in the context of this study.

Firstly, as Goodlad (1967) would have attested to, “not all the knowledge and skills present in 21st-century frameworks are unique and novel to this century” (p. 131). Specialised knowledge and high-level cognitive skills have similarly been required in the past for successful learning and achievement to occur; so too, interpersonal skills such as leadership and cultural competence. Where Kereluik et al. (2013) note an evident difference is in the specifics of the way they have been “instantiated” (p. 131). This includes new skills and knowledge to collaborate digitally, the capacity to analyse cross-disciplinary knowledge, and critical thinking required to make sense of and determine the quality of information. These, as they note, are not new skills or

knowledge areas, but are emphasised in a new way. For Kereluik et al. (2013) this meant paradoxically, “nothing has changed”, and “everything has changed” (p. 133), echoing Postman (1996). Secondly, Kereluik et al. (2013) identify despite the prevailing rhetoric, knowledge of technology was only evident in the subcategory of digital and information literacy; its ubiquity and volume, however, seen to have a transformative effect on other aspects, such as problem solving & critical thinking.

Table 2.1. Categories of 21st century Knowledge

Knowledge category	Sub-categories	What has changed?
Foundational knowledge (to know)	• Core content knowledge • Digital/ ICT literacy • Cross-disciplinary knowledge	New skills required to navigate, contribute through, and discern information from rapidly expanding digital knowledge-base
Meta-knowledge (to act)	• Creativity & innovation • Problem solving & critical thinking • Communication & collaboration	Problem solving and critical thinking transformed by access to volume of data. Increased need for collaboration with diverse others (which requires increased cultural competence)
Humanistic knowledge (to value)	• Cultural competence • Ethical/ emotional awareness • Life/ job skills	Development of value system respecting difference and maintains empathy

Note. Adapted from ‘Realms of Knowledge’ Kereluik et al. (2013).

Similarly, individuals, organisations (educational and economic), and government departments have undertaken the exercise of contextualising and organising this thinking, developing a range of frameworks, models, and curricula intentions, specifically about what children should be learning, learning to do and learning to be at school (see for example Ananiadou & Claro, 2009; Dryden & Vos, 2008; Fadel et al., 2015; Freeman et al., 2017; Fullan & Langworthy, 2014; OECD, 2005, 2018; Trilling & Fadel, 2009). Of particular relevance here, the recent OECD (2018) framework makes explicit the collaborative nature of capabilities required. Internationally, such reforms

provide a means to leverage school improvement, serve equity goals, be relevant, and future-focused, as well as provide internal coherence (Sinnema & Aitken, 2013). Such reform documents provide insights into what learning is valued and sought, as well as illuminating requirements for teachers. Together these have been significant features contributing towards changing pedagogy and environment, notably influencing ‘innovative’ practice and environments.

In New Zealand, as in other English-speaking countries, *The New Zealand Curriculum* (NZC) (Ministry of Education, 2007), developed from the 2000-2002 Curriculum stocktake (Ministry of Education, 2002), similarly emphasised goals of improvement, equity, future focus and coherence (Sinnema & Aitken, 2013). The NZC outlined a vision for “young people who will be confident, connected, actively involved lifelong learners” (p. 7), and set out learning areas, values and dispositions determined to be essential for a future-focused education in the New Zealand context, and in supporting students’ participation in an increasingly diverse, multicultural and global community (see Table 2.2 below).

Table 2.2. The New Zealand Curriculum vision for learning

Our vision is for young people:

- Who will be creative, energetic, and enterprising;
- Who will seize the opportunities offered by new knowledge and technologies to secure a sustainable social, cultural, economic, and environmental future for our country;
- Who will work to create an Aotearoa New Zealand in which Māori and Pākehā recognise each other as full Treaty partners, and in which all cultures are valued for the contributions they bring;
- Who, in their school years, will continue to develop the values, knowledge, and competencies that will enable them to live full and satisfying lives;
- Who will be confident, connected, actively involved, and lifelong learners.

Confident

- Positive in their own identity
 - Motivated and reliable
 - Resourceful
 - Enterprising and entrepreneurial
 - Resilient
-

Connected	• Able to relate well to others • Effective users of communication tools • Connected to the land and environment • Members of communities • International citizens
Actively involved	• Participants in a range of life contexts • Contributors to the well-being of New Zealand – social, cultural, economic, and environmental
Lifelong learners	• Literate and numerate • Critical and creative thinkers • Active seekers, users, and creators of knowledge • Informed decision makers

Note. Adapted from the New Zealand Curriculum Ministry of Education (2007).

Under the paradigm of 21st century learning, significant emphasis is placed on what children should be learning, learning to do, and learning to be at school. An examination of how learning occurs under this paradigm, as opposed to what learning is important, would require extensive discussion and is outside the scope of the review. However, some specific aspects of the learning process are highlighted in the literature and remain relevant; not least because parallels may be drawn between predominant learning theory, prevailing pedagogy, and the school environments designed to sustain them. It is relevant, therefore, to consider aspects of the learning process, which are valued under the present paradigm, and might be assumed activated or considered in contemporary learning settings.

2.2.5 Evolving theory

Learning can be broadly defined as “any process that in living organisms leads to permanent capacity change and which is not solely due to biological maturation or aging” (Illeris, 2007, p. 3). It is the result of an integration of internal cognitive processes with external interactions between the learner and their (social, cultural and material) environment, and driven by a range of incentives (Illeris, 2007, 2018).

Although there have been attempts to re-cast learning in light of contemporary circumstances (AlDahdouh, Osorio, & Caires, 2015; Downes, 2005; Ireland, 2007;

Siemens, 2005, 2006; Strong & Hutchins, 2009), the field lacks a unifying, named theory paralleling historically predominant theories of behaviourism, cognitive psychology, and constructivism (Chatti, Jarke, & Quix, 2010; Kop & Hill, 2008). Respectfully, such theories have portrayed learning as response acquisition, knowledge acquisition, and knowledge construction (Mayer, 1992).

Instead, emerging through the literature is a set of theoretical concepts and learning types, which individually or collectively become associated with contemporary contexts and absorbed into the nomenclature of 21st century learning. These often accentuate the nature and location of learning, how and where it is accessed, and the respective roles of teacher and student. In doing so, they address and verbalise the type of learning understood to lead to permanent capacity change, and hence desirable in contemporary contexts.

For example, Mezirow (1997) describes ‘transformative’ learning as capacity building through altering frames of reference and conceptual understanding. It is depicted as learning resulting in a change in belief, attitude, or perspective; in turn encouraging empathy, imagination, critical thinking, logic, self-awareness, and reflection. A second example is of ‘deep learning’. In contrast to superficial or surface level learning, deep learning accentuates meaning making, criticality, and conceptual understanding. It is understood to lead to intrinsic interest and motivation to learn more (Biggs, 1987, 1988; Biggs & Collis, 1982; Kember, Biggs, & Leung, 2004). Deep learning is further associated with desirable dispositions of 21st century learning through skills such as character education, communication, citizenship, critical thinking and problem solving, collaboration, and creativity and imagination (Fullan, 2013b).

Significantly, coming through the literature is the desire for growth in student agency as a core component of contemporary learning. Agency is often articulated through the promotion of autonomy, self-regulation, choice, independence, and responsibility (Arnold & Clarke, 2014; Charteris & Smardon, 2017; Haring, Sorin, & Caltabiano, 2019; Merriam, 2018). Agency is also associated with the idea of self-direction, with “the learner taking control of her or his learning” (Merriam, 2018, p. 86), with agency inferring a degree of independence from a teacher or classroom (Dignath-van Ewijk & van der Werf, 2012; Merriam, 2018). In this way it is a concept more familiar to fields of andragogy and paragogy (Corneli & Danoff, 2011; Herlo, 2014;

Knowles, 1968; Thomas & Seely Brown, 2011), leading to critique of its applicability to younger students as overly emphasising the individual at the expense of the context in which learning occurs (Brookfield & Holst, 2014; Merriam, 2018), and portrayal as overly corporate style of approach to learning (Charteris & Smardon, 2017; Drew, 2018). Predominantly though, it is the ideal of the child as ‘agentic’ (Sorin & Galloway, 2007) which flows through the discourse. It is in stark contrast to that prevailing under the theory of behaviourism, which held a construct of children as passive and ‘innocent’ (Sorin & Galloway, 2007).

It can be argued that for this learning to occur there are implications for environments, relationships and teaching. Each place specific requirements and expectations on teachers.

2.2.6 Quality environments

In this usage, the term ‘environment’ is employed to describe its broader, socio-spatial sense. It understands that context is critical in the learning process, and that learning is ‘situated’ – emphasising the social, collective, as well as contextual (Engestrom, 2009; Hendrickx, Mainhard, Boor-Klip, Cillessen, & Brekelmans, 2016; Lave & Wenger, 1991). Hence, the learning environment is understood as socio-spatial in nature, often extending beyond the walls of the ‘classroom’. Ongoing work by the OECD (Dumont, Istance, & Benavides, 2010b; OECD, 2013, 2015, 2017), has been instrumental in shaping and articulating this concept; most recently summarised as a set of seven principles together, making up the ‘pedagogical core’:

1. The learning environment recognises the learners as its core participants, encourages their active engagement and develops in them an understanding of their own activity as learners.
2. The learning environment is founded on the social nature of learning and actively encourages well-organised co-operative learning.
3. The learning professionals within the learning environment are highly attuned to the learners’ motivation and the key role of emotions in achievement.
4. The learning environment is acutely sensitive to the individual differences among the learners in it, including their prior knowledge.

5. The learning environment devises programmes that demand hard work and challenge from all without excessive workload.
6. The learning environment operates with clarity of expectations and deploys assessment strategies consistent with these expectations; there is strong emphasis on formative feedback to support learning.
7. The learning environment strongly promotes “horizontal connectedness” across areas of knowledge and subjects as well as to the community and the wider world (OECD, 2017, pp. 22-26).

An underpinning assumption is also a range of ICT, and digital tools support learning and foster digital literacy (OECD, 2013). The availability of high-speed Internet, mobile devices, and cloud-based solutions have increasingly enabled schools to become networked, creating diverse and expansive possibilities for learning and learning community (Wenmoth & Ham, 2010), in turn enabling utilisation beyond substitution and augmentation, into ways that modify and redefine pedagogical possibilities (Puentedura, 2010). Accordingly, the Education Review Office (2018) report, *Leading Innovative Learning in New Zealand Schools*, identified digital practices common across future-focused schools. They noted teachers; were confident to trial technology when supported by reliable infrastructure; planned, knowing students all had access to a device; made use of cloud-based systems for collaboration, managing learning, and planning. Similarly, students could rely on the system, share and extend their learning, access material anywhere and anytime, and access support quickly to reduce frustration.

2.2.7 Quality relationships

High-quality learning relationships are linked to psychological levels of attachment (as distinct from dependency) (Bergin & Bergin, 2009; Kesner, 2000), and need for reciprocity (Dent-Read & Zukow, 1997). Also, Absolum (2006) has defined the learning-focused relationship as one where both the student and teacher want and know how to work on learning together, and know that the quality and level of achievement will be better as a result. Furthermore, and of particular import in the New Zealand context, the importance of the learning-focused relationship, reflecting culturally responsive and effective has been highlighted by Bishop, Ladwig, and Berryman (2014). Here, cultural responsiveness refers to teachers’ capacity to

acknowledge diverse needs, to take action to address these and to adapt approaches as needs change (Bishop et al., 2014). Bishop et al. (2014) also found a strong relationship between discursive practice and the Māori Concept of *Whanaungatanga* (the centrality of extended family-like relationships). When low levels of Whanaungatanga were observed, “high levels of discursive practice simply did not happen” (p. 207). Similarly, in terms of engagement, “you might be able to get high levels of engagement without Whanaungatanga but it is unlikely” (p. 208).

Hargreaves and Fullan (2012) assess professional capital is critical for teachers charged with developing high-level capabilities in students, revealing it as a ‘cornerstone concept’ that without which, teachers will struggle to meet the needs of learners they work alongside: “It is about what you know and can do individually, with whom you know it and do it collectively, and how long you have known it and done it and deliberately gotten better at doing it over time” (p. 102).

Professional capital is the sum of human capital (a teacher’s knowledge, abilities and skills, developed through experience and training); social capital (the quality and quantity of professional interactions, envisaged as a network of opportunity and influence); and decisional capital (the capacity to make informed decisions and wise judgements when circumstances or logical steps are unclear) (Coleman, 1988; Goddard, 2003; Hargreaves & Fullan, 2012; Leana & Van, 1999).

2.2.8 Quality teaching

Alton-Lee (2003) define quality teaching as:

Pedagogical practices that facilitate for heterogeneous groups of students their access to information, and ability to engage in classroom activities and tasks in ways that facilitate learning related to curriculum goals. (p. 1)

Quality teaching is recognised as a critical determinant in learning outcomes for diverse students, with up to 59% of student performance variance attributable to differences between teachers and classes (by comparison, 21% is attributable to school-level variables) (Alton-Lee, 2003). Alton-Lee (2003) also acknowledges the importance of being responsive to diversity within ethnic groups, in turn, fostering positive outcomes for all students, low or high. The best evidence synthesis, taking a broad view

of achievement and outcomes, outlined ten “generic characteristics of quality teaching” (p. 9) facilitating high achievement and reduced disparity between students:

1. Quality teaching is focused on student achievement (including social outcomes) and facilitates high standards of student outcomes for heterogeneous groups of students.
2. Pedagogical practices enable classes and other learning groupings to work as caring, inclusive, and cohesive learning communities.
3. Effective links are created between school and other cultural contexts in which students are socialised, to facilitate learning.
4. Quality teaching is responsive to student learning processes.
5. Opportunity to learn is effective and sufficient.
6. Multiple task contexts support learning cycles.
7. Curriculum goals, resources including ICT usage, task design, teaching and school practices are effectively aligned.
8. Pedagogy scaffolds and provides appropriate feedback on students’ task engagement.
9. Pedagogy promotes learning orientations, student self-regulation, metacognitive strategies and thoughtful student discourse
10. Teachers and students engage constructively in goal-oriented assessment.

Alton-Lee (2003) also recognised the importance of pedagogical content knowledge specific to the curriculum area. It reiterated earlier findings by Codd, Brown, Clark, McPherson, O’Neill, O’Neill, Waitere-Ang, and Zepke (2002), and reflected in subsequent best evidence syntheses undertaken in New Zealand (Aitken & Sinnema, 2008; Anthony & Walshaw, 2007). These guiding principles flow through to the NZC (2007), noting although, “there is no formula that will guarantee learning for every student in every context...students learn best when teachers: create a supportive learning environment, encourage reflective thought and action, enhance the relevance of new learning, facilitate shared learning, make connections to prior learning and experience, provide sufficient opportunities to learn, and inquire into the teaching-learning relationship” (2007, p. 34).

The Ministry of Education (2017) reiterated these approaches in the publication *Implementing an Inclusive Curriculum*. It aimed to support teachers in better

understanding how to plan and teach all their students in ways that involved meaningful participation, engagement, achievement, and recognition of identity. The report identified that effective pedagogy resulted from building on students' strengths and aspirations, recognising the progress they were making, establishing strong relationships with students and their whānau, and making learning 'visible'.

2.2.9 Role of teachers

The theme of making learning visible is central to the work of Hattie (see for example Hattie, 2009, 2012; Hattie, Masters, & Birch, 2015). Hattie (2012) argues that what separates skilled teachers from their colleagues is their capacity to see learning happening or not. Hence they are cognisant of their impact, and have capacity to act as 'activator' of change, being able to "intervene in calculated and meaningful ways to alter the direction of learning to attain various shared, specific, and challenging goals" (p. 15). Therefore for Hattie (2012), capacity for quality teaching and learning is indicated by teachers' 'mind frames' heading into, during, and following a teaching event – a precursor to significant impacts on student learning:

1. Teachers believe that their fundamental task is to evaluate the effect of their teaching on students' learning and achievement.
2. Teachers believe that the success of students is based on what they do (or don't do). Teachers want to talk more about the learning, rather than teaching.
3. Teachers see assessment as feedback about their impact.
4. Teachers engage in dialogue, not monologue.
5. Teachers enjoy the challenge and never retreat to just 'doing their best'.
6. Teachers believe that it is their role to develop positive relationships in learning spaces and staffrooms.
7. Teachers inform all about the nature of learning.

For Hattie (2012) teachers need to see themselves as "evaluators, change agents, adaptive learning experts, seekers of feedback about our impact, engaged in dialogue and challenge, and developers of trust with all, and...see opportunity in error" (p. 159). It adds to the list of nomenclature used to describe teachers. History is replete with such metaphors for teachers, often indicating the role they perform, position in relationship with those they are teaching, and level of control, power and status afforded (Oxford,

Tomlinson, Barcelos, Harrington, Lavine, Saleh, & Longhini, 1998). Hence: “sage on the stage” and “guide by the side” (King, 1993, p. 30); expert, formal authority, personal model, facilitator, and delegator (Goodyear & Dudley, 2015; Grasha, 1994); and manufacturer, conduit, nurturer, scaffolder, entertainer, acceptor, and learning partner (Fullan, 2013a; Oxford et al., 1998). In the Oxford et al. (1998) research, the way teachers were described or described themselves, often reflected beliefs around education and learning, along with aligned pedagogical approaches. For Oxford et al. (1998) these were mainly concerned with participants’ perspectives on education as social order, cultural transmission, learner-centred growth, or social reform.

Relanguaging has extended to include role descriptions of ‘students’. The OECD (2013), and Education Review Office (2018) for example, consistently use the term ‘learners’, as have other international policy documents (Biesta, 2010). Biesta (2010) shows this follows the emergence of a “new language of learning” (p. 541); in part emancipatory, but at the same time signalling a ‘lack’ of something, either developmental or curricular. Similarly, ‘teachers’ in some newer schools are renamed ‘learning advisor’ or ‘coach’ (Benade, 2017c; OECD, 2013). It is a gesture towards student-centredness, horizontality, and an attempt towards ‘de-schooling’ everyday language. Also a useful indication of the type of ‘teacher’ such schools are looking to appoint.

Often, as Sinnema and Aitken (2013) discuss, translation of principles into practice is contingent on several factors, the key to which are teacher’s disposition towards change. With more experience, teachers’ ‘theories of practice’ become more firmly embedded, requiring significant learning and work to sustain and embed new practice (Hattie, 2012). In their review, Sinnema and Aitken (2013) suggest specific challenges experienced by teachers embarking in significant curriculum change are concerned with a requirement for conceptual change in how they considered their practice. They draw on the cognitive framework proposed by Spillane, Reiser, and Reimer (2002) concluding that, “new information, such as that embedded in a new curriculum, does not simply supplant existing knowledge and practice” (Sinnema & Aitken, 2013, p. 127). Hence, the influence of prior knowledge, variation in interpretation, misunderstandings of new ideas, the salience of shallow rather than deep features, bias towards previous beliefs and values, teacher’s emotions, and desire to maintain self-image, may each contribute towards slowing policy implementation.

Although in the study by Sinnema and Aitken (2013) these challenges pertain to curricula reform, they could equally, as suggested by Spillane et al. (2002), be applicable in other circumstances.

In outlining contemporary drivers and understandings around quality environments, teaching, and relationships, what becomes evident is that teachers in the early part of the 21st century hold an especially complex and demanding role (Wood, 2017a). Furthermore, to Benade (2017a), this role also occupies a challenging ground – between the need to employ a progressive pedagogy, balanced with a range of more traditional, often standards driven expectations. The conceptual cluster portrayed above, and more broadly relating to educational ‘innovation’ also presents teachers and schools with a significant demand for translation and interpretation.

2.2.10 Innovation in schools

Innovation in schools involves an initial idea, its implementation, followed by an outcome that produces a significant change leading to raised productivity, increased efficiency, and/or improved teaching and learning. Such innovations may emerge in the form of new pedagogical theories, teaching methods and strategies, instructional tools and technologies, or in the form of structural changes (Serdyukov, 2017).

OECD (2013) identify that in schools, innovation may take place within the ‘pedagogical core’. As they acknowledge though, “changing the basic ingredients of the pedagogical core is not by itself to change the nature of the learning environment and of outcomes for this requires those elements to be used effectively and innovatively” (p. 44). The OECD (2013) research, drawing from a number of case studies, does however suggest a number of ways this may be achieved (see Table 2.3 below).

Table 2.3. Forms of innovation in schools

Category	Examples
Content	• Introduction of competencies, and subsequent use of competencies matrices to enable assessment of progress/ self-monitoring e.g. in the stages of writing, confidence, goal setting etc. • Active use of ICT and digital resources, developing critical literacy for engaging with digital media. • Prioritisation of social competency in learning programmes,

	building socio-emotional awareness, team function, communication and social skills. • Introduction of interdisciplinary approach to curriculum, creating opportunities for information integration, and transference to new topics • Development of intercultural awareness and language competences, building cultural competence and communication skills. • Focus on sustainability and environmental issues.
Resources	• Equitable access to digital hardware and software e.g. Bring Your Own Device (BYOD) programmes, use of online courses, games, online document sharing, and task management. • Attention to design and use of educational facilities and infrastructure to promote and support approach to learning, from individual to community, indoors and outdoors. • Creation of ‘memorable learning settings’, reinforcing identity of particular learning community
Teachers (educators)	• Increasing access to expertise by bringing in community members, specialists, experts and peers, to expand the concepts of teacher and learner. • Involve parents as active participants, increasing social capital, teaching capacity, and community engagement. • Older students take mentoring role with younger peers, or learn alongside one another in mixed age settings.
Students (learners)	• Combining different learner ages, integrating year levels in multi-age settings. • Exercise of control over student entry, possibly admitting those vulnerable to exclusion or failure (not applicable in the majority of New Zealand schools zoned for local community). • Involvement and connection with ‘parents as learners’, building sense of learning as ‘lifelong’. • Open and integrated approaches to learners with special needs. • Participation in ‘virtual classrooms’, or open-access learning, for those in rural and remote areas.

Note. Categories of the ‘pedagogical core’ adapted from OECD (2013).

The above provide examples of innovative practices generated through the OECD (2013) research and case studies. Some are examples of fundamental change within schools; others are a reconceptualisation of pre-existing elements. Bolstad et al.

(2012) drew on Hess and Meeks (2010) and refer to the latter as ‘unbundling’, “a process where innovators deconstruct established structures and routines and reassemble them in newer, smarter ways” (p. 41).

The OECD (2013) research, determines rethinking organisational patterns within school can lead to significant innovation, “less to totally transform the organisation of learning so that it is unrecognisable but to develop more complex, flexible arrangements that accommodate the demanding aims that learning environments are today striving to achieve” (p. 72). These initiatives centre on regrouping teachers into teams, regrouping students beyond fixed age-level classes, reconceptualising how learning time is used, and innovating pedagogy and assessment (see Table 2.4 below).

Table 2.4. Forms of pedagogical innovation in schools

Category	Examples
Regrouping teachers into team situation	• Provides opportunities for team teaching. • Creates context for professional learning, feedback, and sharing of good practice. • Enables shared reflection, and discussion about learning. • Encourages shared planning of learning experiences. • Affords us of alternative teaching approaches. • Enables alternate grouping strategies. • Creates opportunities to target specific cohorts of learners. • Increases professional visibility.
Regrouping learners	• Enables flexibility to group older and younger students together. • Allows for smaller groups within the larger group to facilitate belonging and engagement.
Rescheduling learning time	• Organisation of learning into fewer, longer blocks of time to enhance opportunities for deeper learning to occur. • Capacity for increased flexibility, responsiveness, and personalisation to individual learning needs. • Integration of meaningful ‘rituals’ e.g. for meeting as a community, shared reflection and planning. • Learning supported outside ‘regular school hours’.

Widening
pedagogical
repertoires

- Incorporation of inquiry and ‘authentic learning’ (‘real life’) approaches, to develop creativity, deep thinking, communication and collaboration.
- Presentation of learning to a ‘real’ audience.
- Adoption of ‘tech-rich’ opportunities (driven by learning) to experience ‘technology-dependant’ learning experiences, such as virtual collaboration, simulations, and access to ‘distant’ resources
- Filmmaking and audio-visual production as vehicles for learning.
- Provision of a ‘mix of pedagogies’ from formal to spontaneous.

Note. Categories of organisational relations and pedagogy adapted from OECD (2013)

Since the OECD (2013) publication, additional innovations have come to the fore. Examples include: ‘flipped’ approaches to learning (Aidinopoulou & Sampson, 2017), where students view content before the lesson, freeing lesson time for interactive activities, feedback, and further scaffolding of learning; ‘maker spaces’, emerging from ‘maker culture’, referring to informal spaces for “people who are engaged in the creative production of artifacts in their daily lives” (Halverson & Sheridan, 2014); STEM programmes, shorthand for science, mathematics, engineering and technology (Sanders, 2008); and STEAM programmes, which additionally foster creativity alongside innovation (Liao, 2016). The *NMC/CoSN Horizon Report: 2017 K–12 Edition* (Freeman et al., 2017), also describes the educational technology on an ‘adoption horizon’ of 1-5 years as being ‘maker spaces’, robotics, analytical technologies, virtual reality, artificial intelligence, and the ‘internet of things’. Such approaches may not be innovative for all teachers. For Halverson and Sheridan (2014), the thinking, if not technological advancement surrounding maker culture, can be traced to Papert (1980), and thence back to Piaget (1929). Similarly, in terms of innovation in pedagogical, as well as physical design, researchers have highlighted the approach developed in Reggio Emilia, as being pioneering and influential (Hall, 2017; Halpin, 2007; Spratt, 2017; Uppitis, 2004). In an interview with founder Luis Malaguzzi, recorded in Edwards, Gandini, and Forman (1993), there are multiple connections with the writing of Vygotsky (Stone, 2012). Hence, as Plowden (2018) demonstrates, the evolution of innovative learning and environments is, “part of a long and steady process of improving education, one that has been in progress for hundreds of years” (p. 2). It provides a pertinent pause for reflection on ‘innovation’ itself.

2.2.11 ‘Innovative’ practices

An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behaviour is concerned, whether or not an idea is “objectively” new as measured by the lapse of time since its first use or discovery...If an idea seems new to the individual, it is an innovation. (Rogers, 2003, p. 12)

As discussed, the extent to which pedagogy is contemporary, or ‘innovative’, over and above that previously presented, remains somewhat questionable. Not only is innovation itself problematic, but because something is innovative does not, by default, correlate with effectiveness (West & Farr, 1990). As Hattie (2009, 2012, 2015a) has argued, practices such as inquiry-based learning and problem-based learning, although perhaps considered to be innovative, lack a substantive level of measured impact that (to date) justifies their indiscriminate adoption. So too, the assumption that ‘innovative is better’ can lead to a reduction to a binary debate of the sort noted by Cloke and Johnston (2005). The resulting over-simplification may lead to “unproductive tensions” (p. 5) that get in the way of developing more nuanced understandings of practice and practice improvement. As will be seen in the context of learning environments in schools, a similar tension is apparent between progressive concepts of education, the spaces designed with them in mind, and the idea that both are innovative. Spatially, as will be discussed, there are strong parallels between what is regarded as progressive now, and that regarded similarly in the 1970s (see for example Cleveland & Woodman, 2009; Imms, 2018; Woolner, 2010), to the extent that parallels could well be drawn between contemporary ‘innovative’ directions for learning and learning spaces, and those forwarded through the influential Report (Central Advisory Council for Education, 1967), even if, many of these were poorly realised (Brogden, 2007). Such discourse also includes the idea that innovation in education has tended to follow cyclical patterns of innovations along relatively familiar themes but in away that innovative ideas remain localised or applied in a ‘watered down’ manner (Elmore, 1997).

Its cyclical and localised nature suggests innovation is not necessarily innovation to all. In education, for an innovation to have a lasting, and broad impact it needs to be “systematic, consistent, and scalable” (Serdyukov, 2017, p. 4). But to

Rogers (2003), 'newness' is an individual perception. Innovation requires communication channels, time, and a social system in order for adoption on a large scale. Besides, as Rogers (2003) shows, the time required relates to the innovations' rate of adoption (the relative speed it is adopted), as well as that required for the innovation-diffusion process; the process, "through which an individual...passes, from first knowledge of an innovation to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision" (p. 37). As Rogers (2003) notes, "an individual seeks information at these various stages...to decrease uncertainty about an innovation's expected consequences" (p. 37). In his research on the implementation of new technology Rogers (2003) ascertained that innovation adopters could be categorised into 'ideal types'. Abstracted through his data, and graphed into a normal distribution, it recognises adopters as being: innovators, early adopters, early majority, late majority, or laggards. For Rogers (2003), "the weight of system norms must definitely favour an innovation before the late majority are convinced to adopt" (p. 284). To laggards, resistance may be entirely rational from their point of view. Resistance may continue until reaching certainty that an idea will not fail.

In the present study, with its focus on collaboration, although relevant, these readings of innovation and the diffusion of innovation are perhaps overly reliant on an individualistic conception of evaluating originality; innovation may equally apply at group, organisational, or societal levels (West & Farr, 1990). In this regard, as Anderson, Carsten, and Bernard (2004) evaluate, an innovation may be considered relative rather than absolute; "that is, an innovation may be common practice in other organisations but it would still be classed as such if it is new to the unit under research" (p. 149). Moreover, it is unlikely a specific innovation will be provide what they refer to as 'absolute novelty', "since most innovations will be a mixture of emergent processes, adopted and adapted procedures which are in common usage elsewhere, and ideas which become sharpened over time by realistic limitations imposed by the organization" (p. 149).

In the discourse surrounding innovation, "intentional introduction and application" (West & Farr, 1990, p. 9) are key. As West and Farr (1990) evaluate, it is this that distinguishes innovation from creativity in the context of workplace. Furthermore, as Serdyukov (2017) has suggested, scalability is critical. Both ideas are

pertinent when considering ‘innovation’ in the form of spatial change – the next section of the review.

The second section of the review examines thinking that has led to the reconceptualisation of school space. It documents incremental change in the design vernacular of New Zealand schools relating to pedagogical intention. In addition, an excursion is made into spatial theory and conceptualisations of space as inherently socio-spatial. Its relevance here is in critically examining space as a something that ‘matters’ humanly, and therefore educationally.

2.3 Incremental progressivism in New Zealand primary school space and the emergence of the ILE

The notion of ‘learning environment’ considered previously pertained to environment as ‘context’; abstracted in its broadest educational sense (Engestrom, 2009; Lave & Wenger, 1991; OECD, 2013, 2015, 2017). The conjunction of innovation and space, however, takes the notion of ‘physical school space’ and conceptualises it as a relevant and determinable, synthesising contemporary learning discourse into a designed and spatialised response (Kokko & Hirsto, 2020).

At a design level discussion about ILEs lies in aligning spaces for teaching and learning with contemporary, or ‘21st-century’ pedagogies. At a socio-spatial level, it draws on the concept of ‘built pedagogy’; understood as the architectural embodiment of educational philosophies (Monahan, 2002, 2005). Monahan (2005) takes the idea of educational space and suggests that in arriving at a particular layout and design, not only does it signal and enable particular practices to be carried out, but also by default it inherently constrains others. The idea that space both constrains and communicates intentions is a classic distinction, one often applied in reference to school space (see for example (Proshansky & Wolfe, 1974), and explored further in section 2.3.7.

To Monahan (2005) the idea of ‘built pedagogy’ is used to describe the “lessons taught by technological systems and spaces” (p. 9). It illuminates the idea the environment has a role to play in transmitting what is possible, permitted, prevented, and prohibited. Luz (2008) described it as “the ability of space to define how one learns, teaches, acts or responds” (p. 1). Monahan (2002) considers classroom designs articulate much about the pedagogical intentions underpinning them, such that school

space may be read on a continuum from discipline to autonomy. Desks bolted to classroom floors imposed specific use, restricted movement, and illustrated no educational desire for flexibility. They pertained to a sense of authority, control, and conformity. By contrast, open classrooms “embody pedagogies of freedom and self-discovery...[they] invite and almost demand that individuals appropriate space to their specific needs” (p. 5). At the mid-point Monahan (2002) considered that buildings would contain affordances that would “enable but do not require flexible behaviours: movable partitions and desks illustrate space left open to interpretive use” (p. 5).

School buildings, central to public education in a democratic society, have frequently reflected innovation and drawn debate (Baker, 2012; Weisser, 2006). A virtual timeline of predominant types of school learning environments in New Zealand and overseas, reveals a history of incremental change, reflecting a succession of pedagogical, economic, social and political factors impacting purpose of, and access to, schools as sites of formalised learning (Baker, 2012; Burke & Grosvenor, 2008; Gislason, 2009a, 2009c; Imms, 2018; Seaborne, 1971; Upitis, 2004; Wallace, 1980; Weisser, 2006).

The progression in New Zealand has largely mirrored that overseas; from pre-European history (Calman, 2012; Moorfield, 2011), development of the first schools (Barrington & Beaglehole, 1974; Cumming & Cumming, 1978; Jenkins; Jones & Jenkins, 2011; New Zealand History), emergence of public schools and classrooms (Barnard, 1850; Carl, 2009; Gislason, 2009a; Kaestle, 1973; Lancaster, 1809; McClusky, 1920; Seaborne & Lowe, 1977; Weisser, 2006), open-air schools (Rodwell, 1995, 1998; Seaborne & Lowe, 1977; Williams, 2014; Worpole, 2000), open plan schools (Cameron & Robinson, 1986; Cuban, 2004; Dudek, 2000; Gray, 1978; Lang, 2016; Martin & Pavan, 1976; Rodwell, 1998; Seaborne, 1971; Weinstein, 1979), *kura kaupapa* (Barrington & Beaglehole, 1974; Calman, 2012; Stephenson, 2006), and ‘normal’ schools (Flaherty & Flaherty, 1974). Internationally, changes in school design have been comprehensively documented (see for example Gislason, 2009c; Seaborne, 1971; Weisser, 2006); similarly in the New Zealand context by (Alsaif, 2014; Cumming & Cumming, 1978); Williams (2014).

Current iterations of ‘Innovative’ or ‘modern’ learning environments are, therefore, merely the latest in a catalogue of built educational responses spanning two

hundred years. Hence it is not the first time dominant ‘classroom’ based models have been contested; nor the first time they have been explicitly designed with teacher collaboration in mind. In terms of broad-scale educational space innovation, open-plan schools, developed from the late 1950s in UK and USA, and subsequently in Australia and New Zealand, aimed to achieve both, signifying the largest departure from traditional classroom-based environments (Cameron & Robinson, 1986; Cuban, 2004; Dudek, 2000; Gray, 1978; Lang, 2016; Martin & Pavan, 1976; Rodwell, 1998; Seaborne, 1971; Weinstein, 1979). Although, as the literature sets out, open plan schools were largely considered a failure. Nair (2014) reflected they, “stalled progress in the school building arena for thirty-five years or more” (p. 9), they remain an important phase from which to draw. A brief look back therefore, is apropos; especially given critics’ tendency to leverage this comparison, dismissing ILEs as similarly flawed (see for example Overington, 2011; Parker, 2012; Speranza, 2012).

2.3.1 Innovating design: Open plan

The context for innovation in the form of open plan schools was variously pedagogical, economic and socio-political. Internationally, the post-war baby boom and policy changes precipitated increased numbers of students with diverse needs attending school, as well as shortages of teachers (Lang, 2016; Marks, 2009; Ogata, 2008). Reductions in available materials and budgets required architects to develop cheaper, faster building methods (Brogden, 2007). Socio-politically the late 1960s were a time of social and political upheaval, increasing counter-culture, civil and class activism, participatory democracy, and discontent with foreign policy and domestic issues of social inequity and child poverty (Imms, 2016; Kogan, 1987), where optimism in the air suggested: “a spirit of innovation, experimentation, venturesomeness” (Gross & Murphy, 1968, p. 9). In schools, progressive ideas emphasised the integrated day, discovery and independent learning, and children’s natural styles of learning (Rothenberg, 1989). In the UK the influential Plowden Report (Central Advisory Council for Education, 1967), promoted child-centred and constructivist approaches, and as Brogden (2007) adds, “had quite a lot to say about school buildings” (p. 55).² Also, new technologies such as a television, audio-visual equipment, language

² The Central Advisory Council for Education (1967) was better known as *The Plowden Report* under the chairmanship of Lady Bridget Plowden. The report focused on the English context. An additional report (The Gittins Report, 1967) was conducted in Wales at much the same time and reached similar conclusions (Kogan, 1987).

laboratories and overhead projectors were “being put to imaginative use as an integral part of the school program” (Gross & Murphy, 1968, p. 11).

In the UK Finmere Primary School in rural Oxfordshire, and Eveline Lowe Primary School in Southwark, London (Central Advisory Council for Education, 1967), both designed by David and Mary Medd, formed exemplar sites and were instrumental in informing subsequent conversations about pedagogy and school buildings (Bennett, Andrae, Hegarty, & Wade, 1980; Boddington, 2001; Brogden, 2007; Franklin, 2012; Ogata, 2008; Pearson, 1972; Seaborne, 1971; Woolner, 2010). For Woolner, Hall, Wall, Higgins, Blake, and McCaughey (2005) the Finmere design was distinctive in that it spurned the cellular classroom model; instead utilising folding partitions to divide and open the two classrooms and hall space, combining or separating them in order to create a fluid environment. One particular design innovation was the incorporation of interest ‘bays’ (Woolner et al., 2005). These three-sided ‘bays’ were designed to accommodate specialised activities such as science, cooking and ‘messy work’ with groups of three to four students. They were formed using partitions screens or purpose built furniture. The intention, consistent with ideas of progressive education, was to integrate such practical activities into the everyday learning experience, rather than to segregate it (Franklin, 2012).

Eveline Lowe Primary School in Southwark, London, effectively scaled-up the Finmere design and was recognised as enabling teachers to “cooperate more easily” and provide for “flexibility of organisation and individual learning” (p. 395). The design also considered the use of scale, finishes, colour, lighting, and furniture, as well as setting aside areas for “messier kinds of work” (p. 400). The design incorporated quiet spaces in the form of ‘Kiva’, withdrawal areas, illustrated in the *Building Bulletin* Department of Education and Science (1967) and captioned: “The first priority in shared spaces is for quiet withdrawal areas provided on a generous enough scale to make withdrawal a workable reality” (p. 7).

Influenced by changes in British primary schools, and the work of cognitive psychologist Jerome Bruner, the New York based *Educational Facilities Laboratories* (EFL), established in 1958 led much of the spatial innovation in the USA, supporting schools to maximise the quality, utility and usage of their facilities. Encouraged by the belief learning was most effective when children could explore at their own pace and in

differentiated spaces, open plan classrooms were often constructed with the minimum of walls to accommodate team teaching and the contemporary approach to schooling (Marks, 2009; Ogata, 2008; Proshansky & Wolfe, 1974; Tanner & Lackney, 2006).

‘Freedom’ was a critical concept for Gross and Murphy (1968) in the EFL’s *Educational change and architectural consequences: A report on facilities for individualized instruction*; “To the student, freedom means increased responsibility for his own education. To administrator and teacher it brings heavier responsibility for deciding the priority of educational goals and the best means to use in their pursuit” (p. 7).

These approaches, when adapted in the United States, were termed ‘open classrooms’ offering an ‘open education’. Importantly, Weinstein (1979) clarifies the two innovations. Open education, she suggested, was a set of teaching practices based on the belief children learn best when they have responsibility to make choices, to interact with their teachers and peers and to be able to explore an environment rich in resources. Open space schools referred to schools constructed without internal walls; hence the open space school “does not represent a philosophy of education so much as a trend in building design” (p. 578).

The conversion of EFL’s philosophy into spatial design was in direct contrast to how they deemed school facilities. “Rigidity, isolation, sterility, formality, inaccessibility, uncommodiousness, starkness, immobility, permanence, constraint” (Gross & Murphy, 1968, p. 10) were replaced by intentions of “flexibility, diversity and accessibility” (p. 40). They recognised that change would be an ongoing issue exhorting school administrators not to construct buildings that would limit their future possibilities. “Perhaps educators and architects can create an ever changing, constantly improvable environment for the learning process” (p. 16). The set of five learning environment arrangements outlined by Gross and Murphy (1968), although not explicitly articulating the Medd’s ‘messy’ space, lend themselves to an early typology of internal design. Consisting of the classroom, independent study, dialogue, seminar (small group discussion), presentation, they are not unlike much later classification systems (Fisher, 2005a; Nair, Fielding, & Lackney, 2005; Thornburg, 2004). The EFL approach to design fostered, “a quality of openness, both human and architectural” (Gross & Murphy, 1968, p. 40). In so doing the aim was to create environments “intended to accommodate and encourage self-renewing innovation in the students,

teachers and administrators who work in them” (p. 40). Through the reduction of physical barriers the aim was for teachers to work more collaboratively; thus “visibility, congeniality, independence and constant interchange would be the natural mode encouraged by such surroundings” (p. 40).

In New Zealand, the adoption of open plan designs for schools began in 1970 with the adoption of a revised *Primary School Building Code*, and under the influence of changing design philosophies in the UK (Williams, 2014). One of the early prototypes was Melville (later Deanwell) School in Hamilton. It consisted of fourteen ‘classrooms’ divided into four blocks (one lower school, two middle schools and one senior school); set out with a series of verandah and courtyards between them, a small open-air theatre, assembly areas and ball game court (Melling, 1980). The junior block consisted of two carpeted class spaces (each equivalent to two ‘classrooms’ in size), with a vinyl covered resource and ‘wet area’ in the centre. Melling (1980) described it as an under articulated space, a “mini-warehouse with little effort to spatially ‘particularise’ activity” (p. 39), meaning its usage was predominantly left to the imagination of teachers and students.

Despite this, according to Williams (2014), the outgoing principal was complimentary of the design and its capacity to afford a cooperative approach to teaching. The Flaxmere prototype was much employed across the country to a more liberal or conservative degree, with some later versions noted for containing less internal walls than the original model (Melling, 1980), drawing criticism of attempts to replicate the design of Eveline Lowe (and the Canterbury Education Board’s standardised footprint), without having “taken full cognisance of that basic planning vocabulary so painstakingly worked out by England’s School Development Board” (p. 51). Specifically, it was the absence of ‘bays’ and enclosed areas that he considered misguided. It echoed reproaches regarding the relative success of models in England following on from Eveline Lowe (Woolner et al., 2005).

By the time the 1977 *Report on Open Plan Education in New Zealand Primary Schools* (Department of Education, 1977) was published, 16,000 children and 651 teachers were in 124 open plan units in schools (predicted to climb to about 474 schools, about 8% of primary aged children, by the end of 1978). The evaluation recognised the prevalence of open-plan schools, acknowledged “favourable views of

benefits for children” (p. 12), but also noted it “lacked an adequate empirical basis in New Zealand practice” (p. 9). In addition it highlighted training of teachers and teacher attitudes as areas for development. It also determined 55% of teachers reported a higher level of stress than when working in a traditional classroom; that some teachers were concerned about the effect on new entrants, disruptive and shy children; and that only a minority of teachers received any training for teaching in the new spaces. Stress was primarily concerned with having to work with and be observed by colleagues. Also, the extra time required for planning, the need to keep to a strict timetable, noise levels, and the need to work with a larger number of children. Such issues echoed through the ‘survival’ type papers published at the time in the USA (Beardsley, Bricker, & Murray, 1973; Roper & Nolan, 1976).

Despite this, the primary recommendation in the 1977 Report was for “the development of open plan education to continue and be subject to continuing evaluation” (p. 11). In addition, the report’s authors made several recommendations concerning buildings: that maximum size of an open plan unit was equivalent to four classrooms; that there should be a withdrawal space large enough for fifteen children; design should consider for auditory and visual distraction; teachers should have close access to a resource space and preparation space; that suitable furniture be provided for learning and students’ belongings. Furthermore, the report highlighted some areas for improvement relating to teachers and teaching, in particular that teachers were compatible with the model, and each other. “In open plan it is important that staff make every effort to be compatible, cooperative and tolerant” (p. 16), suggested one of the teacher survey comments. Consequently, it was recommended that the existing practice of advertising explicitly for open plan teaching positions be continued, and that time be provided for teacher teams to plan and evaluate programmes and student information.

While the Department of Education (1977) were remaining positive about open-plan, elsewhere, concerns were being raised. Bennett et al. (1980) suggest that although there was clear educational rationale behind the new buildings that, “it is probably true to say that the major basis for their continued development has been an economic one” (p. 45). Pedagogically, criticisms focused on a number of critical factors. They are summarised in Table 2.5 below along with pertinent references.

Table 2.5. Summary of criticisms of open plan schools

Category	Examples
Teacher issues	• Teacher orientation to working in open, team teaching environments and acknowledgment of the demands of a shift from individual to this “desirably corporate” (Hatton, 1985a, p. 238) form of teacher work. • Prevalence of default practices, such that teachers occupying open plan classrooms often continued to teach independently (rather than cooperatively), and in the way they had done in previous spatial settings (Arkwright, Hewitt, Thorne, & Webb, 1975; Bennett et al., 1980; Bennett, Booth, Docherty, Morgan, Scott, Turner, & Walls, 1975; Brogden, 2007; Evans, 1979; Galton, Simon, & Croll, 1980; Tyrrell, Johns, & McNally, 1975). • Lack of specific teacher training (Tanner & Lackney, 2006). • Perceived lack of privacy, hence teachers’ tendency to recreate spatial separation particularly with pot plants, blackboards, bookshelves, or ‘imaginary lines’ (Bennett & Hyland, 1979; Evans, 1974; Gump, 1980; Hatton, 1985b). • Challenges of interpersonal teacher relationships (Brunetti, Cohen, Meyer, & Molnar, 1972; Evans, 1979; Ruhen, 1975). • Perception of reduced relationship with students (Brunetti et al., 1972; Evans, 1979; Ruhen, 1975). • Need for significant organisational frameworks due to complex structures, higher levels of activity, interaction, communication and evaluation (Brunetti et al., 1972; Cooper, 1982).
Building issues	• Noise, due to poor acoustics and vocal competition, resulting in stress and strained voices (National Union of Teachers, 1974). • Lack of overall understanding about ‘what works’, hence “innovation was not necessarily accompanied by evaluation” (Bennett & Hyland, 1979, p. 159).

The study by Brunetti et al. (1972) into team teaching and open-space schools in the USA pointed out that “...it seems clear that the organisational plan underlying the open-space school both requires for its effectiveness and is intended to enable cooperation among teachers” (p. 88). They outlined at the time, the critical nature of the team organisation within the open plan environment and suggested that without this organisation the architecture becomes a hindrance rather than help to teachers’ ability to manage their work. Significantly, the Evans (1979) case study suggests continued corralling of children into classrooms with ‘invisible walls’ was symptomatic of a

profession used to working with predictable levels of visibility and control, a concept she felt fundamentally rooted in the profession and spatiality established within schools. To Evans (1979), individual classrooms, “historically were a hard-won privilege associated with training and certification” (p. 35). Had the open-plan movement targeted the secondary sector, she argues, “it might have provoked a furore” (p. 38) (judged on the belief that primary teachers held lower status and were by less politically motivated to challenge the innovation).

In the UK the Plowden Council were subsequently criticised for making assumptions about large-scale pedagogical direction based on repeated visits to a limited number of innovative schools (Brogden, 2007; Cooper, 1981; Kogan, 1987). Woolner et al. (2005) noted a tendency for open plan to have quickly become architecturally normalised despite aligned pedagogies not being firmly established. They also drew attention to the possibility that architects often met with teachers and school leaders who were leading pedagogical innovation and hence making the assumption that such practice was commonly accepted and adopted. Brogden (2007) further lamented the influence held by Medd and Crowley, the Building Development Group, and the Plowden Report. He asserted they had based their collective vision on teaching and learning practices in a small number of innovative schools, with the anticipation that they would be adopted nationally. Indicative of ‘top-down’ implementation, the paucity of teacher readiness, professional learning and change management processes had led a lack of consistency and the resultant dilution of original expectations.

The subsequent fall from grace of open plan schools towards the end of the 1970s was a consequence of both social and political factors. Concern that academic standards were slipping led to a shift towards more conservative education policy in the USA. Framed in terms of civil division over the Vietnam War, a stagnating economy, Cold War rhetoric, falling standards of literacy and numeracy in schools, and a general backlash against the social trends of the 1960s and 1970s, critics called for a back to basics approach to teaching (Cuban, 2004; Imms, 2016). The brief, ‘whatever happened to the open classroom’ (Cuban, 2004) offers a succinct appraisal; “these enduring pedagogical quarrels are proxies for deeper political divisions between conservatives and liberals” (pp. 70-71). Thus the early 1980s marked the peak of open plan schools and by this point, as Rodwell (1998) reports, “the national enthusiasm for open-plan

school architecture had almost disappeared” (p. 100), and by way of replacement, “the traditional cells and bells factory model had returned to favour” (Cleveland & Woodman, 2009, p. 60). It was a sentiment that led Rothenberg (1989) to assess that “educators should re-examine the philosophy underlying open classrooms and, in revised form and far more carefully than in the past, create open classrooms in schools” (p. 68).

Curiously perhaps, many of the arguments for opening up classroom environments appear now much as they did in the 1960s and 1970s: the democratisation of learning; dismantling of the traditional teacher-student relationship; use of progressive inquiry-driven approaches; increased curriculum flexibility and pedagogies encouraging experiential and personalised approaches; active rather than passive participation; small group rather than whole-class teaching; access to a broad range of artifacts; self-directed, rather than teacher-directed approaches; and increased opportunities for team teaching and teacher collaboration. Each formed common justifications (Bennett et al., 1980; Brunetti et al., 1972; Cleveland & Woodman, 2009; Cuban, 2004). Where differences lie are in availability of technology, changed pedagogical approaches, quality of acoustic preparations; and above all, more sophisticated tools for evaluation (Cleveland & Woodman, 2009; Imms, 2018).

Evaluation would appear to be at the heart of determining whether ILEs will eventuate to be another spatial ‘fad’ (Imms, 2018). In particular, attention has been paid to evaluating impact on student outcomes (Barrett, Zhang, Davies, & Barrett, 2015; Barrett, Zhang, Moffat, & Kobbacy, 2012; Blackmore, Bateman, Loughlin, O'Mara, & Aranda, 2011b; Brooks, 2011; Byers, Imms, & Hartnell-Young, 2014; Byers, Mahat, Liu, Knock, & Imms, 2018; Cleveland & Fisher, 2014; Cleveland & Soccio, 2015; Higgins, Hall, Wall, Woolner, & McCaughey, 2005; Imms, Cleveland, & Fisher, 2016b; Ministry of Education, 2016c, 2016d; Tanner, 2000). Notably to Byers et al. (2018) evaluation often lacked attention towards learning processes, in favour of more easily measurable large-scale standardised testing, suggesting the tools “were often designed for traditional settings and were unable to capture data on the characteristics of student learning that were the predominant driver of good open space design” (p. 39). Continued evaluation is a critical step in reducing the chances that ILEs become short lived, and the likelihood of history repeating itself.

2.3.2 Innovating design: Modern/ Innovative Learning Environments

The Learning Studio Pilot project undertaken in 2008 (Ministry of Education, 2012) was a formative step in designing and evaluating five ILEs, or ‘Learning Studios’. Each was based on a different design, building on concepts and research from overseas (Bergsagel, Best, Cushman, Stephen, McConachie, & Sauer, 2007; Fisher, 2005a; Nair et al., 2005), feedback on local spatial innovations (Deaker, 2007), and reflections from the ongoing Building the Education Revolution policy in Australia (Commonwealth of Australia, 2011; Newton & Gan, 2012). Evaluation of the pilot projects, such as the studio design at Kilbirnie School (see Figure 2.1 below), assessed that studios encouraged team teaching, operated with fewer resources (as they could be shared), required negotiation over spatial usage, and operated well with the (typically 3) teachers involved.

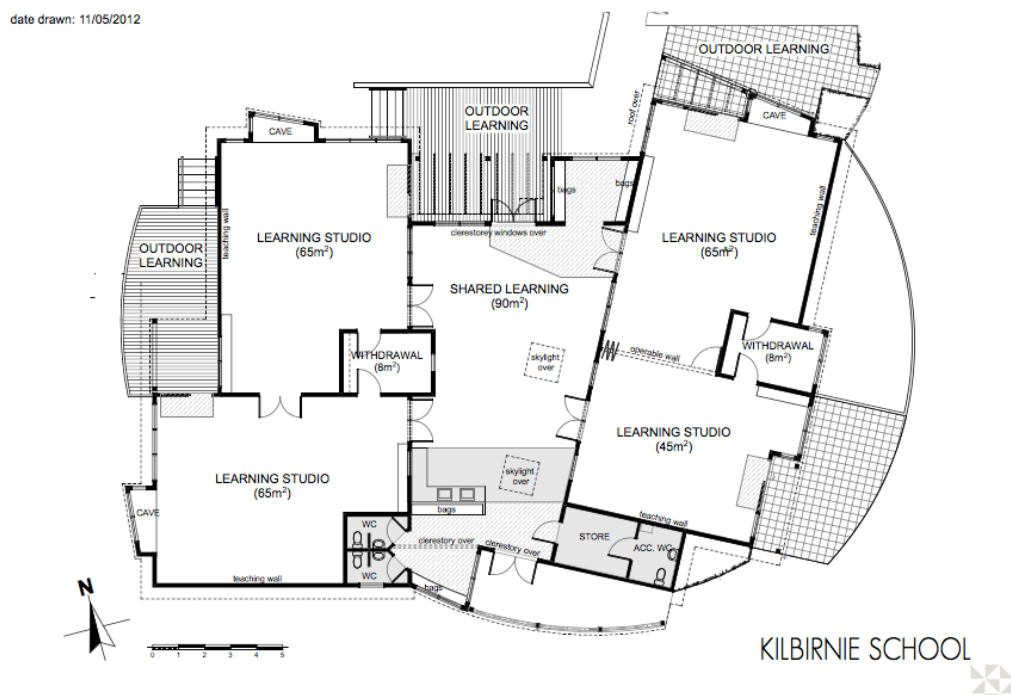


Figure 2.1. Example of a Learning Studio, reprinted from Ministry of Education (2012).

The shift away from the provision of traditional classrooms and towards flexible learning spaces in ILEs formed a central component of the subsequent Ministry of Education's 2011-2021 Property Strategy. The strategy assessed that classroom-based, teacher-centric spaces were no longer optimal in supporting contemporary approaches to learning and teaching. The importance of spaces that support flexible styles of learning and teaching, offer ubiquitous access to technology, are adaptable over time, as

well as being designed with sustainability in mind were therefore highlighted as critical areas of investment. Contingent within this is requirement for new schools to conform to building standards specifying aspects of acoustics, lighting, air quality, insulation, sustainable materials, heating, and accessibility. Designs were also assessed against criteria specifying the provision of ‘flexible learning spaces’. Such criteria detailed the use of ‘breakout spaces’ and ‘learning streets’, as well as outdoor learning spaces, teacher workspaces, appropriate storage, furniture and fittings (Ministry of Education, 2016b). Similarly, existing schools were (and still are) obliged to prioritise the spending of their 5 Year Agreement (5YA) funding on upgrading and enhancing their learning environments to the same set of specifications (Ministry of Education, 2016a), (excepting work required to rectify health and safety concerns, and integrity of building structures).

As the Ministry of Education (2011) strategy reflected, these changes were long overdue; the majority of its 17,000 buildings and 38,000 classrooms noted to be “built between the 1950s and 1970s following the post-war baby boom” (p. 13). Of these, typically occurring standard building designs were: ‘Avalon block’, (built between 1955 and 1962) (see Appendix X); ‘Canterbury block’, (1959-1965); ‘Nelson 2 storey block’, (1959-1975), and ‘Formula block’, (1962-1970) (Ministry of Education, 2015a, 2015b, 2015c, 2016e). Furthermore, contributing considerably to the volume of schools engaged in constructing ILEs in New Zealand, the ongoing rebuild following the devastating Canterbury earthquakes in 2010 and 2011 required an investment of \$1.137 billion to both rebuild and renew 115 schools in the Christchurch area over ten years (Ministry of Education, 2014). Also, investment in repairing and renovating defective buildings (particularly those with water tightness issues) across the country was considerable (Jones, 2016).

Investment in design does not, by default, foster innovation. In the assessment by Dovey and Fisher (2014) the drive towards ILEs internationally had been met with “a new round of architectural innovation” (2014, p. 2). Their analysis of contemporary international award-winning designs included the development of typology of spatial types showing that the concept of ILEs includes a broad range of alternatives and interpretations (see Figure 2.2). They suggested although some designs potentially led to more responsive pedagogical practice and maintained degrees of agility and flexibility, others were more likely to “camouflage a conservative pedagogy” and

reinforce existing spatial practices (p. 43). Likewise, teachers in traditional environments may well be employing innovative pedagogical approaches (Mahat, Bradbeer, Byers, & Imms, 2018).



Figure 2.2. A typology of spatial types by Dovey and Fisher (2014) adapted and represented to show degrees of relative openness by (Imms, Cleveland, & Fisher, 2016a, p. 4)

The evolution of recent learning environment design in New Zealand schools can be similarly charted. The deployment of ILEs follows a comparable pattern with many early examples replicating traditional classroom structures, albeit with more contemporary glass and fittings (Deaker, 2007). Similarly, marked differences exist between those models exemplified in the Ministry of Education’s 2012 *Learning Studio Pilot Review* and those currently illustrated on the Ministry’s website. The former often associated with clusters of classrooms accessing a shared space (akin to Dovey and Fisher’s Type C – convertible classrooms); the latter noted as being more open, “dedicated commons”, to use the Dovey and Fisher (2014) terminology (more akin to Type E). It is these that Dovey and Fisher (2014) anticipate will ultimately result in more responsive practice over time.

This brief history, documenting incremental progressivism in New Zealand primary school space demonstrates examples of social, cultural, political, and economic

influences on school design. Arguably therefore, ILEs could be considered to constitute the optimum environment for learning in the here and now. Yet as multiple researchers have concluded, on its own the occupation of ILEs has minimal impact on pedagogical change (see for example Barrett, Zhang, Moffat, & Kobbacy, 2012; Blackmore, Bateman, Loughlin, O'Mara, & Aranda, 2011; Brooks, 2011; Cardellino & Woolner, 2019; Cleveland & Fisher, 2014; Gislason, 2010; Higgins, Hall, Wall, Woolner, & McCaughey, 2005; Lackney, 2008; Lippman, 2010; Martin, 2002; Mulcahy, Cleveland, & Aberton, 2015; Painter, Fournier, Grape, Grummon, Morelli, Whitmer, & Cevetello, 2013; Tanner, 2000; Upitis, 2004; Woolner, Hall, Higgins, McCaughey, & Wall, 2007). Instead, as Byers and Imms (2016) evaluate, “the long-term success of the learning spaces movement lies in the hands of the classroom teacher. It is clear that a teacher’s environmental competency is a clear predicator of any spaces impact to facilitate its intended pedagogical function” (p. 20). This is an important position; and echoes the earlier Tanner and Lackney (2006) assessment that a lack of teacher professional learning contributed towards the demise of open plan schools. Here, environmental competence, or “the ability to understand and effectively use physical instructional space for a pedagogical advantage” (Lackney, 2008, p. 133), is used as a way of explaining the link between teachers’ awareness of their physical environment coupled with their capacity to use or adapt it to suit pedagogical purpose. Specifically in terms of environmental competence (Lackney, 2008), three key concepts come to the fore through the literature. Each would appear to help teachers understand how ILEs may support their practice and ultimately collaborative teaching practice to take place. These are concepts of affordances, learning settings, and flexibility.

2.3.3 Affordances

Affordances, recognised by Gibson (1977), are defined as action possibilities developing from the relationship between the environment and individuals. They are described as designed, improvised, or emergent. Designed affordances describe those intended by the designer, improvised being those that were not considered in the design phase but become manifested in usage, and emergent “the set of affordances that is neither anticipated and designed by developers nor actively recognized and improvised by users in use, but which nonetheless has an impact on the interactions between artifacts and actors” (Van Osch & Mendelson, 2011, p. 3). The study by Young,

Cleveland, and Imms (2019) highlighted that teachers are adept at recognising affordances in detail, particularly concerning action possibilities connected with teaching and learning. The actualisation of these affordances however, was dependent on the “complex practices, activities and behaviours of teachers and students, as informed by their school culture and past experiences” (p. 24). This conclusion is consistent with that of Byers and Imms (2016) in determining occupation alone will not influence practice.

2.3.4 Learning settings

Following the example set by Alexander, Ishikawa, Silverstein, Jacobson, Fiksdahl-King, and Angel (1977), Nair et al. (2005); Nair, Fielding, and Lackney (2009) developed a ‘Pattern Language Model’ of school design; adapting and spatialising the Thornburg (2004) “primordial metaphors for learning”, which had theorised alternate modalities of (predominantly) online learning. Thornburg (2004) assessed that learning within communities occurred in four modalities; described as the ‘campfire’, representing the intergenerational and sometimes sacred storytelling space; ‘watering hole’, depicting a local gathering point and informal forum for dialogue and conversation; the ‘cave’, for retrospection and isolation, and ‘life’, where learning in ‘real-life situations’ is applied.

As Nair et al. (2009) later considered the predominant mode of learning in classrooms was through ‘campfire’ settings, with seating “aligned so they face the teacher at the front of the room” (p. 67). For Nair, as Thornburg had recognised, it was the provision of multiplicities of modes of learning, as well as the time and opportunity for students to spend time in each of them that would lead to effective learning. Gislason (2007) notes that this created an opportunity to align with Deweyan approaches to learning, illustrative of how “Dewey’s sophisticated notion of pedagogical media – e.g. laboratories, gardens and dramatisations – can be realised in fairly traditional but maximally flexible spaces” (p. 11). Nair (2014) expands the idea, identifying twenty such ‘modalities’ of learning, each one offering specific affordances for learning and teaching (Table 2.6).

Table 2.6. Modalities of learning

1. Independent study	11. Roundtable discussions
2. Peer-to-peer tutoring	12. Performance-based learning
3. One-on-one learning with teacher	13. Interdisciplinary learning
4. Teacher lecture	14. Naturalist learning
5. Team collaboration	15. Art-based learning
6. Project-based learning	16. Social-emotional learning
7. Distance learning	17. Design-based learning
8. Learning with mobile technology	18. Storytelling
9. Student presentations	19. Team teaching and learning
10. Internet-based research	20. Play and movement based learning

Note. Adapted from Nair (2014)

In a similar way, Fisher (2005a) linked pedagogical activities to spatial requirements; delineating specific ‘learning settings’ that he considered appropriate to activities of delivering, applying, creating, communicating and decision-making. For example, ‘creating’ emphasised the process of active learning across multiple disciplines in the process of moving ideas from the abstract to the concrete; ‘delivering’ emphasised the presentation of ideas and sharing of information; ‘decision-making’ to planning, reviewing data, and implementing ideas. To Fisher (2005a), there was logic to taking each of these pedagogies and translating them into simplified spatial types. Hence, a ‘collaboration incubator’, a 20 square metre space with access to resources, technology and display, formed a suitable setting to support activities of idea creation, teamwork, creativity and prototyping of concepts. Other spatial types included those for projects, ‘breakouts’, presentations, and individual or group learning. Provision of, and access to a broader range of such learning settings provided opportunities to facilitate various modes of learning, in several group sizes, from individual, group contexts to large group spaces. For Fisher (2005b), explored further in Dovey and Fisher (2014), an important consideration was the clustering of such learning settings, such that adjacencies (or ‘affinities’ as Fisher called them) could result in opportunities to share access to break out spaces and resource areas. An important connection to make here is between such settings and the typology of typical school layouts (Figure 2.2). Here, as Dovey and Fisher (2014) note, as ILEs become more internally complex, so too do opportunities for such adjacencies to be created, enabling upscaled ILE spaces to include

a variety of spatial settings, such as those described by Thornburg (2004), Fisher (2005a), or Nair (2014). Reminiscent of the Medds' 'bays' described by Franklin (2012), the idea is that spatial variation will better support student-centred pedagogical practices. The extent to which these settings are articulated and utilised is useful in the context of this study.

2.3.5 Flexibility

The new words which educators use to express their needs for space are words like "open", "simple", "flexible", "ample", and even, it is gratifying to report, "beautiful", and "exciting". Of all of these perhaps "flexible" is the most used and the most abused, but also the most promising. (Gross & Murphy, 1968, p. 15)

An oft-made assumption in the discourse is that ILEs are by virtue 'flexible', or provide for flexibility. Upton (1994) defines flexibility as "the ability to change or react with little penalty in time, effort, cost or performance" (p. 73). Extending this further, Monahan (2002) noted that designed flexibility embodied "plasticity" (p. 1), and could be subdivided into five spatial properties: fluidity (the design of space for flow), versatility (the property of space that allowed for multiple use), convertibility (ease of adaptation over time), scalability (capacity to increase and decrease space over time), and modifiability (the capacity of a space to be manipulated or appropriated). For Woodman (2011) flexibility arguably gave students a high level of ownership providing learning opportunities that "can be seen as necessity, spontaneity, equity, democracy, and empowerment" (p. 247).

An apparent tension however, is that although flexibility may be spatially desirably, possible, and articulated, it is only through significant effort on the part of teachers that it becomes activated (Wood, 2017a), "it is perhaps more helpful to think of a flexible learning space as an achievement (conditional on people's capabilities) rather than a thing" (p. 234). The inherent problem, posed by Wood (2017a), is that adopting and maintaining flexible use of space increases the demand on teachers; "flexibility implies the increase of choice but also the burden of having to choose" (p. 235). To be able to enact such flexibility results from experience and knowledge, and what Fisher (2004) termed a 'spatial literacy'. It also requires the permission and agency to be able to do so. Correspondingly, flexibility could be classified as a competence (Lackney,

2008; Swafford, Ghosh, & Murthy, 2006). It is a similar sentiment to Monahan (2002), who notes, “Individuals must invest more energy to work in these spaces, because the spaces do little work on their own” (p. 2).

For Featherston (2010), however, it is the purposefulness of design that is paramount, not its flexibility. She maintains, “Stability means everyone knows where things are, which is important in a very dynamic and unpredictable program” (p. 47). Similarly, that “diversity is more useful than flexibility. A purposeful environment – rich, complex settings that provide cues for use” (Featherston, n.d.). For Featherston the confusion with ‘flexibility’ is the preconceived indication that a space can be altered and changed momentarily, with furniture shifted in order to redirect space usage. It is a perspective that takes much from the notion of the environment as the ‘third teacher’ advanced by the Reggio Emilia approach (Edwards et al., 1993). In Featherston’s view ‘purposeful space’ signals how it is to be used, by how many students, and for what type of learning (as opposed to activity):

Where curiosity is seen as the spark that drives the processes of learning, the environment must provoke wonder, exploration, expression and reflection: and where learning is seen as both an individual and a social process – construction and co-construction of meaning, the environment must present rich possibilities for relationships and learning in a wide diversity of groupings and settings.
(Featherston, n.d.)

Atkin (see OECD, 2013) has adopted a similar philosophy, elaborated according to learning activity according to built form, size, furniture, and material needs.

It is, perhaps also a timely reminder of language usage in conjunction with learning environments. As Wood (2017b) has pointed out, the noun phrase ‘flexible learning space’ can be connected in three ways (flexible learning-space; flexible-learning space; flexible, learning space), and connoted to mean three things (space itself is flexible; space enables flexibility within; site for flexible learning). Notably, the Ministry of Education (2011) use the term ‘flexible’ in three ways: firstly to in terms of pedagogical flexibility, or ‘adaptive expertise’ (Baroody, 2003) on the part of the teacher; secondly to describe use of an environment; and thirdly to suggest a building design which will allow for future alterations to accommodate pedagogical ambitions. Others refer to this as ‘adaptability’ (Gosling, Naim, Sassi, Iosif, & Lark, 2008; Schmidt

III, Eguchi, Austin, & Gibb, 2010). Given the rapidity of global change, the sense that schools today may or may not be able to accommodate ‘what learning looks like’ in 40 years, may well require a level of such adaptability (Monahan, 2002; Wood, 2017b). Although out of the scope of this review, the concept of architectural obsolescence in this context is highly relevant (Abramson, 2016; Brand, 1994; Schmidt III et al., 2010).

2.3.6 ILEs: The opportunity to collaborate

New spatial settings may prompt a shift in relationships between teachers and between teachers and their students. For some teachers, new spatial settings may also precipitate a considerable change in the way they work, particularly in what they do with their colleagues. For others, they may provide a catalyst for schools to consider the nature, organisation and structure of teaching and learning (Alterator & Deed, 2013; Campbell, Saltmarsh, Chapman, & Drew, 2013; Cooper, 1982; Deed & Lesko, 2015; Deed et al., 2014; Martin & Williams, 2012; Saltmarsh et al., 2015).

ILEs afford settings where teachers can work more communally and collaboratively with colleagues. Their scale, size, and design often make this intention implicit. The intention is that a collaborative approach will lead to a higher degree of pedagogical variation, professional learning and teamwork, which, as a result, better meets the needs of all learners (OECD, 2013). It is this requirement for spatial collaboration, which may represent a wholesale shift in the workplace environment and teachers’ relationships with each other. Here, not only should ILEs be considered as spaces for student learning but also as spaces of teacher workplace (Vischer, 2008).

2.3.7 Space and spatiality: A theoretical excursion

A fundamental premise, encapsulated, although not always clearly articulated in contemporary learning environment literature, is that “space matters” (McGregor, 2004a, p. 2). Through investigating the relationship between spatial practices, materials, interactions and the built environment researchers are therefore able to gain a better understanding of the influence each has on one another, as well as those sent and received (perceived) by society. Hence researchers have argued the benefits of linking spatial theory with research on school learning environments as a means to frame the discussion and build further theory (Benade, 2017c).

2.3.7.1 *The ‘spatial turn’*

Specifically, this emerged from researchers suggesting the ‘spatial turn’ undergone in the social sciences had gone largely unnoticed in educational contexts (Fisher, 2004; Gulson & Symes, 2007b; Withers, 2009). Defined by Soja (2008), the ‘spatial turn’ is “a response to a long-standing if often unperceived ontological and epistemological bias that privileged time over space in all the human sciences, including such spatial disciplines as geography and architecture” (p. 13). Critical spatial theory leverages the idea of ‘space’ as more than simply a container for action (Casey, 2009; Foucault, 1977; Gottdiener, 1997; Hubbard & Kitchin, 2011; Lefebvre, 1991; Massey, 2005; McGregor, 2003b; Soja, 1989, 2008; Tally, 2013; Usher, 2002), in much the same way educationalists argue a child’s brain is no longer conceptualised as a container to be filled with knowledge’ (Claxton, 2008; Gardner, 1993). Hence understandings spatial theory provides an alternate means to make meaning of not only space, but also spatial encounters, and spatiality in schools and ILEs, such as boundaries, frontiers, and connections; power arrangements, hierarchy, influences, identity and belonging.

2.3.7.2 *Production of space*

Pertinent to the context of schools and ILEs, the theory developed by Lefebvre (1991) provides language through which to articulate and ‘place’ spatial discussion (Benade, 2017c). Lefebvre (1991) theorised space is simultaneously ‘perceived, conceived, and lived’, mapped to social, physical, and mental domains respectively, such that spatial production lies at the nexus of three components. Spatial practice referred to the way “society is revealed through the deciphering of its space” (Lefebvre, 1991, p. 38). It involves space as a lived and daily reality; and how people (both individually and collectively), go about and understand their everyday activities ‘in space’; how they move around within and between, work, navigate relationships between local and global, and use signs, symbols and texts as navigational aids. Representations of space relate to how space is more literally ‘known’ and ordered, often through planned, architectural, and cartographic nomenclature; to Lefebvre (1991), how space is “intellectually worked out” (p. 39). Representational space relates to embodied symbolism, artistic renderings, and the interpretation of “non-verbal symbols and signs” (p. 39). To Lefebvre (1991) ‘space’ as a concept, was ‘produced’ at the intersection or nexus of the three – hence ‘production of space’. In the context of

this study the ‘production of space’ becomes useful in separating teachers’ enacted practices, designs and purposiveness of spaces, and the broader ideas that might be represented by ILEs as ideological spaces (Benade, 2017c).

Following the neo-Marxist tradition set by spatial thinkers such as Lefebvre, examination by Massey (2005) renders space as acutely political, interconnected, reflective of a turbulent relationality, and markedly ‘unfinished’, leveraging the idea of space as relational and contingent. She emphasises the social meaning of space and spatiality, and their construction (and reconstruction): juxtaposed between multiple and shifting, social, economic and political factors. Her definition of space draws on terms of interrelated interactions:

First we recognise space as the product of interrelations; as constituted through interactions, from the immensity of the global to the intimately tiny...Second, that we understand space as the sphere of the possibility of the existence of multiplicity in the sense of contemporaneous plurality...Third, that we recognise space as always under construction... it is always in the process of being made. It is never finished; never closed. Perhaps we could imagine space as a simultaneity of stories-so-far. (p. 9)

For Massey (2005), space is implicitly relational and complex. How people understood space, spatiality, and tell spatial stories is connected to how they understand the world and the interlinking trajectories contained within. The idea of trajectories is useful here, going beyond a mathematical trajectory or parabolic passage. Instead, trajectories represented “processes of change in a phenomenon” (p. 12) in terms of which ‘stories’ are emphasised through, or ‘became’ history. Phenomena could be attitudes, concepts or knowledge; constituted at multiple levels, be they individuals, groups, or cities. They imply a level of premeditation rather than randomness, and criticality rather than acceptance.

The point Massey (2005) asserts is that commonly inherited and reinforced narratives can often become perceived as the only view of something, at the exclusion of other equal stories of spatiality and temporality. This immutable connection of space with time forms a central idea of Massey’s thesis: “unlike time, it seems you can spread space out around you. Time is either past or to come or so minutely instantaneously *now* that it is impossible to grasp. Space, on the other hand, is *there*” (Massey, 2005, p. 117).

Like Lefebvre's work beforehand, the recognition that it was impossible to talk about space without reference to time forms a strong component of her work. If we could imagine space as "simultaneity of stories-so-far, then places are collections of these stories, articulations within the wider power-geometries of space" (p. 130). To Massey this reflects the difference between space and place, frequently a contested region of theoretical discussion (Agnew, 2005). Massey does not subscribe to a romantic, nostalgic, static view of place; unlike the Tuan (1977) depiction of "places stay put. Their image is one of stability and permanence" (p. 29). Instead, Massey's view of place is reflective of the relationship between the temporality of space and the multifarious human experience of it: "a 'constellation of processes'" (Massey, 2005, p. 141). It reflects the instability of the 'event of place' in that it is always shifting; not only the elements that are in place currently and beforehand but the processes and factors that brought them into place in the first instance:

Rather, what is special about place is precisely that throwntogetherness, the unavoidable challenge of negotiating the here and now (itself drawing on a history and geography of thens and theres); and a negotiation which must take place within and between both human and nonhuman. (p. 140)

Here the idiomatic throwntogetherness is not to be confused with haphazardness. Instead, it links to notions of permeability, porosity and "the chance of space may set us down next to the unexpected neighbour" (p. 151). Hence, Massey (2005) suggests a need to "confront the challenge of the negotiation of the multiplicity" (Massey, 2005, p. 142), which alongside the contextual throwntogetherness, is beneficial in the milieu of this study. It invites investigation of components, concepts and contingencies, yet at the same time warns against overgeneralisation and assumptive description. In the context of this research what is also useful about the work of Massey is the extent to which ILEs may be viewed as political or 'policy objects' through the way they encapsulate socio-material representations of a particular idea or way of thinking.

2.3.7.3 Behavioural settings

As a concept the encapsulation of socio-material representation becomes activated through the notion of 'behavioural settings', advanced by Barker (1968). Spaces such as libraries, laboratories, churches, courts, cinemas, and lecture theatres, come imbued with unconscious expectations of desirable behaviour; regardless of

whether or not we have entered that specific space before (Lawson, 2001). These expectations develop through the perception of scale, materiality, and socially constructed norms, and are acknowledged in private (home) contexts (Bachelard, 1958; Busch, 1999), as well as public buildings (Dovey, 1999); accomplished through the body's response to features such as enclosure and exposure, verticality and horizontality, mass, volume, interior spaciousness, and light (Tuan, 1977, p. 116).

As Tuan (1977) asserts, institutional buildings often contain the capacity to “educate people's awareness and conception of reality” (p. 110). Perhaps nowhere is this more overt than a cathedral, temple or mosque, rich in iconography and ‘symbolic capital’ (Bourdieu, 1977), designed to form instructional mechanisms. There is “direct appeal to the senses, to feeling and the subconscious mind” (Tuan, 1977, p. 114). So too, the interplay of inner light and dark, radiance and shadow within becomes as much a religious metaphor as architectural feature (Weightman, 1996). Moreover, their geographical setting has emphasised elevation and position. Similarly, built space may act on an individual's feelings and psychological wellbeing (Lawson, 2001). For example, interactions with space are able to engender a sense of attachment (Tuan, 1977), happiness (de Botton, 2006), and place (Casey, 2009; Massey, 2005). Critical thinkers in educational spatiality often apply this narrative to the classroom (Couch, 2018; Mulcahy, 2014).

2.3.7.4 *The ‘classroom’*

Considered spatially, the idea of a ‘classroom’ presents a unique context for spatial thinkers. Classrooms are frequently ascribed sophisticated presence, meaning and spatiality – as both object and idea – simultaneously layered with materiality and symbols which in turn contribute to the collective subconscious regarding what ‘it is’, and how people understand it (Leander et al., 2010; Proshansky, 1974 #2514). To Leander et al. (2010) for example, the classroom acts as “conceived or imagined space – an imagined geography of a particular kind”. The authors caution that while ‘the classroom’ might appear the “epitome of immobility”, its conceptualisation remains “highly mobile” (p. 332) with teachers, researchers and policymakers, (and by inference students and parents), often imagining it in different ways. Leander et al. (2010) remind us how a ‘classroom’ in being socially and spatially conceptualised and constructed, presents an alternate discourse to how they are physically embodied.

To many, however, the classroom exemplifies a space which has remained relatively unchanged, “peculiarly static” (McGregor, 2004a, p. 4) as a structure, in physical, organisational and social terms, a point reinforced by Fisher (2004) who argues classrooms have “remained seemingly immutable since the Industrial Revolution, with spatiality playing a silent and subconscious role in schooling” (p. 36). Here, ‘subconscious’ plays into the treatise of ‘disciplinary space’; graphically portrayed in *Discipline and Punish* (Foucault, 1977), illustrating the mid-19th-century development of prisons (with ‘single-cells’, guards, and surveillance), and workshops (with guardians, monitoring, quality control, and bells). In both cases the adoption of such approaches activated means by which to control spatial dispersal, mobility and individuality, and to “establish presences and absences” (Foucault, 1977, p. 143).

As far as spatial ‘coding’, and power dynamics were concerned, in Foucault’s observation (1977), there were striking similarities between social arrangements in factories and prisons, and those subsequently developed in workplaces, hospitals and schools. In the school setting, the utilisation of regular bells, linear arrangement of students, elevation of the (panoptic) teacher, and ‘cellular’ nature of accommodation, has led many since to describe traditional school settings as ‘single-cells’ (and bells) (see for example Charteris & Smardon, 2018; Fisher, 2004; Heppell, Chapman, Millwood, Constable, & Furness, 2004; McGregor, 2004b). Notably for Paechter (2004), the use of metaphor in education “can be used to draw us into particular discourses”, or as a “call to arms and...have ideological force” (p. 460), an idea further leveraged by Barnett (2011). Hence the ‘single-cell’ metaphor is most commonly utilised by with intent on challenging the spatial and organisational status quo. Tyack and Tobin (1994) argue that classrooms form part of the “grammar of schooling...the regular structures and rules that organise the work of instruction” (p. 454). Primary schools have a familiar ‘grammar’ of year levels divided into self-contained coeducational classrooms, with an individual teacher; and, although innovation has occurred, “it is the departure from customary practice...that attracts attention” (p. 454).

2.3.8 Classroom as teacher workplace

While it is more common to conceptualise classrooms as places of learning for students, they are also places of work for teachers. Taking the cue from Lefebvre and Massey, the body of work by (McGregor, 2003a, 2004b, 2004c) applies spatial theory

directly to the context of schools; and, most critically for this study, recognises an absence of attention to the spatial dimension of school as ‘workplace’ for teachers. ‘Classroom as a workplace’ is, therefore, a valuable consideration when considering spatial changes in schools; particularly in terms of ‘reconstruction’ brought about by changing actors, relations, networks and connections (McGregor, 2004c; Nias, 2002). Furthermore, as workplaces they have been inherently private, such that; “classrooms are, for the most part, safe places, generally free from scrutiny, where teachers are free to live stories of practice” (Clandinin & Connelly, 1996, p. 25).

Where ILEs are concerned, what becomes apparent through the literature is the potential to impact on spatial aspects of teacher’s workplace, notably in conjunction with visibility, territory, and ownership.

2.3.8.1 Visibility

Considered spatially, ILEs are characterised as ‘up-scaled’ with internal glazing, giving rise to a sense of ‘vistaed visibility’ (Prain, Cox, Deed, Edwards, Farrelly, Keefe, Lovejoy, Mow, Sellings, Waldrip, & Yager, 2014), sending instant messages to inhabitants of ‘openness’. In doing so they provide an antithesis to ‘single-cell’ classrooms (which have historically privileged levels of privatisation, autonomy and territorialisation over teacher collaboration); and an intention of making pedagogical practice more ‘transparent’ (Campbell et al., 2013; Hayes, 2006; OECD, 2013, p. 69; Saltmarsh et al., 2015). However, an intention towards deprivitisation via architectural openness may be received as professional visibility. From a Foucaultian perspective, visibility, or the privileging of visibility of one party over another, gives rise to a potential power imbalance (Foucault, 1977). Hence, to Brighenti (2007), the rule that “if I can see you, you can see me” (p. 326) does not always apply; instead often experienced as an asymmetrical relationship located at the intersection between perception and power. To Brighenti (2007) there are minimums and maximums of what she refers to as ‘fair visibility’, with social exclusion at one extreme, and super-visibility at the other; super-visibility defined as meaning “where everything you do becomes gigantic to the point that it paralyses you” (p. 330).

Where visibility within an ILE provides an opportunity for teachers to see one another practise, Prain et al. (2014) have noted that this should not be an opportunity for ‘surveillance’. Neither should it create a sense of “unwelcome monitorial panoptic

control over teacher behaviour in open settings” (p. 201). To Page (2017), this phenomenon is associated with open learning spaces but accredited towards a more general intensification of surveillance type activities, which includes collecting student voice, analysing data, and examining digital networking. Hence to Page (2017) there is an apparent “blurring of boundaries: while formal teaching observations sit within official surveillance and performance management, the status of learning walks, pupil feedback and social networking remain contested and the boundaries between official and unofficial surveillance become blurred” (p. 1000). It places the concept of visibility in a prominent position.

2.3.8.2 Territory and ownership

As Henkin, Vineburgh, and Dee (2010) observed, previous concepts of territory in schools are likely to be disrupted by a shift into collaborative settings. They assessed that “transitions to collaboration are likely to evoke concerns and conflicts regarding territory, as organisational members are compelled to interact differently in both physical and psychological spaces” (p. 53). This is verified by Deed and Lesko (2015) who observe that openness, “disrupts teaching and learning conventions through distortion of form and creating uncertainty about function and meaning” (p. 220).

An element of this disruption may be attributed towards a shift in conceptual ownership and territory. Historically, within traditional primary school settings teachers have enjoyed a close association with a particular space and class; territory has remained a predominantly predetermined, apportioned and uncontested factor in teacher practice (Bissell, 2004). By contrast, intentional usage of ILEs may well mean that teachers do not occupy their ‘own space’ (Campbell et al., 2013), challenging the traditional preoccupation with of classroom as ‘kingdom’ (Altman, 1975; Henkin et al., 2010; Kleinsasser, 1991; Lortie, 1975; O’Toole & Were, 2008).

Brown and Robinson (2007) define the organisational construct of territoriality as, “the behaviours people use to express their feelings of ownership toward physical or social entities” (p. 253), acknowledging it forms an “important, prevalent and overlooked” aspect of workplace and organisations. Socially constructed through “processes of signalling and defending it” (p. 253), territoriality is concerned with negotiations of “space, ownership, identity and power” (Henkin et al., 2010). Brown, Lawrence, and Robinson (2005), building on work by (Pierce, Kostova, & Dirks, 2001);

Pierce, Kostova, and Dirks (2003), argue that psychological ownership is threefold; it fulfils the need for efficacy, is grounded in a requirement for self-identity, as well as the need for people to have “a place of their own” (Brown et al., 2005). Such ‘territory marking’ in the workplace is through the display of objects, frequently familial photographs and personal artifacts within spaces, and often in a teacher’s situation, their desk (often a symbol of change) (Belk, 1988; Brown et al., 2005; Dawkins, Tian, Newman, & Martin, 2017; Goulding & Friedman, 2018; O’Toole & Were, 2008). Hence as Bissell (2004) observes:

Teachers use the walls and other elements of the classroom to display things as a way of claiming the space as their own, as a way of reflection of whom they are as a teacher, and as a communication device to make personal connections with the students and to actively engage the students in learning. (p. 29)

Acknowledging a shift from individual to collective space and collective territory, Alterator and Deed (2013) noted that teachers reengaged in increased negotiations about spatial usage. They did not ‘own’ a space. Instead, “teachers reported a higher level of ownership over the open space. It is described as ‘everybody’s’” (2013, p. 325), representing a considerable shift in established practice, and one that may challenge notions of teacher identity (Henkin et al., 2010). Teachers may still negotiate or sequester a ‘home base’, within ILEs, establishing frontiers and boundaries, in an attempt towards re-territorialisation, either by design or by default. An example of this is reported in Mulcahy (2014). Here, a photograph shows children sitting in neat rows within a designated carpet area within a larger space. In doing so it ‘mimics’ or tries to “reassemble an old territory, in a process of reterritorialisation” (p. 508). Similarly, Alterator and Deed (2013) notes that teachers may realise new pedagogical approaches are possible “yet continue to use pedagogical practices appropriate to more conventional cellular classrooms (p. 318).

2.3.9 ‘Space matters’

In sum, a theoretical basis in ‘space’ offers an opportunity to consider the underpinning assumption “space matters” (McGregor, 2004a, p. 2), in light of contextual change for teachers collaborating in ILEs. In taking a critical view of school space as the product of socio-spatial relations, the study joins researchers who have moved towards the application of spatial theory in educational settings (see for example

Charteris, Smardon, & Nelson, 2017; Cleveland, 2009; Dovey & Fisher, 2014; Fisher, 2004; Gislason, 2007; McGregor, 2003a; Mulcahy, 2014; Nespor, 2002; Peterson, 2015; Sherringham & Stewart, 2011; Woodman, 2011).

It is clear through the literature that the move towards ILEs implies two factors: firstly that teachers benefit from a rudimentary understanding about how space may influence practice and visa versa; and that secondly the space assumes that collaboration is an integral practice component. Thus the review now shifts towards interrogating the broader concept of collaboration. The value of this section is in identifying that a significant volume of literature on collaboration exists, and that there is benefit from understanding underpinning principles and themes before investigating applications specific to teachers.

2.4 Conceptualising collaboration

Collaboration has been promoted extensively in multiple practice and research fields, and is frequently referenced in business, education, public agency and health research literature, (Adler, Hecksher, & Prusak, 2011; D'Amour, Goulet, Labadie, San Martín-Rodriguez, & Pineault, 2008; Gajda, 2004; Gulati, Wohlgezogen, & Zhelyazkov, 2012; Hamel, 1991; Hansen, 2009; High and Complex Needs Unit, 2007; Huxham & Vangen, 2000; Katz & Martin, 1997; Koliba & Gajda, 2009; McFarlane, 2017; Todeva & Knoke, 2005; Tuckman, 1965; Tuckman & Jensen, 1977).

Despite this it has proven perennially challenging for researchers and writers to conceptualise, define and theorise with any consistency, including in educational contexts (Dillenbourg, 1999; Gajda, 2004; Vangrieken et al., 2015; Wood & Gray, 1991). Instead it has become what Gajda (2004) consider to be a “catchall to signify just about any type of inter-organisational or inter-personal relationship, making it difficult for those seeking to collaborate to put into practice or evaluate with certainty” (p. 66).

For the purpose of this research clarification regarding what is and what is not collaboration is important, especially given the way the term is used so readily in conjunction with ILEs. This understanding will lay the foundations for subsequent discussion. As will be described many of the characteristics of collaboration found in the broader literature are also subsequently applied in educational settings. The review

section therefore forms a short but important bridge between the previous one on space, and the one following on teacher collaboration.

2.4.1 Collaboration: What is it?

In seminal work by Gray (1989) collaboration is driven by a commitment towards advancing a shared goal or resolving a conflict, particularly in the face of complex issues. Hence collaboration is cast as a process of solving a multifaceted problem, the nature of which people are unable to do on their own because they lack the knowledge, expertise, resource or experience to do so. Therefore to Gray (1989), “collaboration is a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible” (p. 5). This definition has formed the genus for many others, each emphasising elements of process, shared responsibility and accountability, and need for commitment towards shared goals (see for example Mattessich & Monsey, 1992; Mattessich, Murray-Close, & Monsey, 2001; Roschelle & Teasley, 1995; Thomson, Perry, & Miller, 2009; Wood & Gray, 1991). On the basis of this definition however it is clear that some conceptual clarity becomes diluted on subsequent application. Why the confusion and why is this important?

A synthesis of the literature highlights four main reasons for such conceptual confusion. Each is relevant to the current review.

Etymologically, collaboration describes both an activity and an organisational unit. An activity may include working together, joining forces, working in partnership, acting as a team, and co-operating with one another. Alternatively, it can identify an organisational unit such as a conglomerate, consortium, council, joint venture, task force, or strategic alliance (Gajda, 2004, 2006; Huxham & Vangen, 2000; Todeva & Knoke, 2005). In this research it is the activity of collaboration, in a team situation that is of interest.

Contextually, collaboration may occur at multiple scales. It may be context specific, referring to people working together with others in the same organisation (intra-organisational). Alternatively to individuals from different organisations working together (inter-organisational) (Beyerlein, Freedman, McGee, & Moran, 2003; Boschma, 2005; Gajda & Koliba, 2007; Hansen, 2015; Knoben & Oerlemans, 2006;

Oerlemans & Meeus, 2005). In the latter case membership may be more fluid, a membership characteristic that Huxham and Vangen (2000) points out can be ambiguous and in turn may lead to ‘collaborative inertia’ due to lack of consistency. Furthermore, participants may be geographically and physically proximal; alternatively non-proximal, and reliant on technological and virtual interfaces to enable opportunities for mixed presence collaboration (Tang, Boyle, & Greenberg, 2005). Most relevant for the purposes of this study are those that relate to intra-organisational and proximal contexts.

Philosophically, collaboration may refer to two types of incentive. Predominantly these are delineated according to emphasis on either commercial or social purpose and generally founded on competing value systems. As Thomson and Perry (2006) explain, approach rooted in classical liberalism places an emphasis on aggregating “private preferences into collective choices through self-interested bargaining” (p. 20). Hence individual parties are intent on achieving their own goals (particularly financial, through innovation), despite different interests and expectations. In contrast an approach centred in civic republicanism leverages the differences between parties in an integrative process to commit to something that goes beyond what could be achieved individually (see for example Beyerlein et al., 2003; Keidel, 1995). In contrast, Appley and Winder (1977) propose that collaboration is required to develop new solutions for pressing environmental issues. They drew on Emery and Trist (1973) in assessing that an “increasingly turbulent environment” produced “diffuse social problems (meta-problems)”, which, synonymous with ‘wicked problems’ identified by Rittel and Webber (1973), require approaches that move beyond competition (p. 280).³ Such complex and ‘diffuse problems’ include poverty, urban decay, pollution, overpopulation, regional disparity and natural resource management (Emery & Trist, 1973). As previously noted, researchers have described contemporary challenges in education as being similarly ‘wicked’, and have highlighted the need for systemic support in understanding the type of systematic approach required (Bolstad et al., 2012; Cherry, 2005; Fadel et al., 2015; Trilling & Fadel, 2009). Therefore in this research it is the latter philosophical approach, civic republicanism that is of foremost relevance.

³ Emery and Trist (1973) attribute the term ‘meta-problem’ to Chevalier (1967).

Conceptually, and of most significance to this research, is the difference between collaboration and concepts frequently euphemised as collaboration, most prevalently cooperation and coordination. Semantically they describe different activities. Overall, collaboration is taken to constitute a significantly more demanding activity to establish and maintain, leading to the wry observation from Kvan (2000); “I suspect we collaborate far less often than we pretend to” (p. 410) and to McDermott and Hall (2016) categorising many versions of collaboration as “pseudo-collaboration” (p. 49), reflecting the presence of collaborative language rather than activities. In this research, this conceptual difference is of particular interest, but requires further discussion.

2.4.2 Is it collaboration, cooperation or coordination?

As stated, the literature points towards a clear conceptual difference between activities of labelled collaboration and cooperation. Teasing apart the difference Kvan (2000) drew attention to “frustratingly similar” (p. 410) lexical roots; determining that while collaboration derives from the Latin *col labore* – to work alongside one another, cooperate comes from the Latin *co operari* – to act in conjunction for mutual benefit. As Kvan (2000) comments, it is interesting to consider that collaboration did not emerge in the English dictionary until 1860, a considerable time after cooperation that had been first acknowledged in 1616, reflecting the idea that “cooperation is a simpler concept than collaboration” (p. 410).

Researchers have determined that collaboration is one of a number of interaction types that can be placed on a continuum of group activity (Mattessich & Monsey, 1992; Mattessich et al., 2001; Peterson, 1991) (see Table 2.7). The difference between types relate to relative levels of formalisation, autonomy, leadership, decision-making, resource management, and the presence or absence of shared goals. In the context of teachers’ work, collaboration, coordination and collaboration are the most relevant. However it is acknowledged that further categories (coexistence, communication, coalition, coadunation) have been discerned, particularly in the fields of multi-agency work and strategic alliances (Bailey & Koney, 2000; Frey, Lohmeier, Lee, & Tollefson, 2006; Gajda, 2004; Hogue, 1994).

Table 2.7. Comparison of characteristics of cooperation, coordination and collaboration

Category	Characteristics
Cooperation	• Indicative of informal relationships that take operate without any structural, strategic or planned effort, and with no commonly defined mission or vision. • Information is shared as needed. • Participants may give endorsement of each other's activities, and offer general support. • Resources are kept separate, as are any resultant benefits. • Accountability and autonomy rests with individuals. • Involves very little risk to participants.
Coordination	• Formally established relationships. • Goals are examined to ensure compatibility. • Roles and responsibilities are divided but participants function relatively independent of one another. • Some planning and communication is required. • Resources are made available to each other; rewards mutually acknowledged. • Activities are synchronised to enable participants to achieve their own goals. • Considered to have little impact on participant's individual core business. • Authority retained by individual participants. • Typically refers to relatively short-term projects, such as the organisation of an event. • Some risk to participants.
Collaboration	• Formal commitment, structure and planning towards a commonly held, and intentionally created mission. • Resources (some of which may be specifically procured for the purpose), as well as rewards are accessible to all. • Participants themselves determine and create authority structures. • Some autonomy relinquished • Requires considerable change in an individual's work. • Greater risk to participants

Note. Summarised from (Mattessich & Monsey, 1992; Mattessich et al., 2001; Peterson, 1991).

Importantly for Peterson (1991) cooperation and coordination might never mature or change into collaboration, but that effective collaboration “cannot occur without simultaneous cooperation and coordination” (p. 91).

2.4.3 Process – the ‘doing part’ of collaboration

To Thomson and Perry (2006), building on Wood and Gray (1991), it is often the antecedents or outcomes of collaboration that feature most prominently in the literature, at the expense of understanding process elements or the ‘doing part’. Thomson and Perry (2006) describe this as the ‘black box’ of collaboration, and articulate it in connection with structure, agency, and social capital. These process elements are useful to consider. They become particularly useful when later applied to contexts of teacher collaboration and ILEs specifically.

2.4.3.1 Structure

The structure part of collaboration relates to governance and administration, particularly regarding decision-making, task negotiation and information sharing. It emphasises the importance of shared purpose, agreement on shared goals, and frames of reference for evaluation (Dillenbourg, 1999; Frey et al., 2006; Gajda, 2004; Gajda & Koliba, 2007; Hansen, 2015; Peterson, 1991; Ring & Van de Ven, 1994; Thomson & Perry, 2006; Thomson et al., 2009; Vangen & Huxham, 2003; Woodland, 2010). It also relates to meetings. Those that start and finish on time, and with a commitment to routines, agendas and minutes, are considered critical to maintaining focus, momentum, and accountability (Beyerlein et al., 2003; Meirink et al., 2010; Ohlsson, 2013; Willumsen, 2006). The use of Information Communication Technology (ICT) systems can support this further; providing common databases, easy to find information, and supporting communication between participants (Beyerlein et al., 2003).

Collaboration requires ongoing negotiation, openness in information sharing, and respect for other’s opinions; attained through consensus reaching and the putting aside of differences (Warren, 1967). Inherently this includes degrees of disagreement and conflict, a natural consequence as collaboration deepens and levels of personal involvement increase (Gajda, 2004). Consequently, researchers have considered those engaging in collaboration benefit from an agreement drawn up in advance (Barron, 2000; D’Amour et al., 2008; Hung, Lai, Yen, & Chen, 2017; Hunsaker, Pavett, &

Hunsaker, 2011). For D'Amour et al. (2008), pre-emptive 'contracts' involved participants setting out specific individual responsibilities, providing a process to adhere to in the event of disagreements; not to avoid them entirely but at least have a process of handling them when they occur.

2.4.3.2 *Autonomy*

One potential area of conflict occurs as a consequence of determining 'who does what' in collaborative situations. Accordingly, researchers have concluded it is important to balance self-interest with collective-interest so that people feel valued and identified as individuals in addition to seeing themselves as group members (Thomson & Perry, 2006; Thomson et al., 2009; Wood & Gray, 1991). Here, too much self-interest and a group are unlikely to be able to agree on goals and approaches; too much collective-interest and individuals may perceive their autonomy and personal identity is lost. In the latter situation, individuals may then become unsure of their unique role, contribution, and decision-making capacity (Gajda, 2004; Gulati et al., 2012; Huxham & Vangen, 2000; Thomson & Perry, 2006). One consequence of this 'autonomy negotiation' is that people may need to "give up part of yourself" in order to participate fully in collaborative situations, and to understand that some autonomy will be relinquished as a result (Thomson & Perry, 2006).

2.4.3.3 *Social capital*

A key process factor that assists in such decision-making is the development of social capital. Social capital in this context refers to the concepts of norms of reciprocity, mutuality, and trust that together contribute to the collaborative process (Thomson & Perry, 2006). To Thomson and Perry (2006) reciprocity is both short and long term. It is initially encountered as willingness and then sustained long term through trust; where fellow participants honour commitments, act honestly in negotiations and do not take advantage of one other. Williams, Harkins, and Latané (1981) argue that one form of advantage taking in collaborative situations occurs through the phenomenon of 'social loafing'. They describe it as the "reduction of individual effort exerted when people work in groups compared to when they work alone" (p. 303), evaluating that people's efforts are higher when individual outputs are recognisable to others. Liden, Wayne, Jaworski, and Bennett (2004) also found that when people perceived that their

efforts were not sufficiently rewarded, there was a higher likelihood of them reducing their effort. Unexpectedly, however, Liden et al. (2004) determined that ‘social loafing’ did not result in reduced overall team performance, as others often stepped in to ‘carry the load’.

Inherent within social capital, trust forms a significant condition underpinning collaboration (Thomson & Perry, 2006). Participants need to be able to trust that they are engaged in exchange relationships that value the two-way transfer of information, resources, and skills.

Trust is particularly pertinent in the context of collaboration as it connects strongly with risk. Risk, as outlined previously, emerges as a formative characteristic of collaboration, which, especially when compared with activities of cooperation and coordination, manifests in the form of increased personal, emotional, and resource investment (Gray, 1989; Gulati et al., 2012; Langfield-Smith, 2008; Mattessich & Monsey, 1992; Vangen & Huxham, 2003). To Das and Teng (1996) risk in collaboration was associated mainly with either relationships or performance: *relational* risk is concerned with the ‘smoothness’ of working relationships between members, *performance* risk to the possibility that collective goals are not accomplished. Collaborative situations benefit from acknowledging this and finding ways to mitigate it.

Building social capital through trust is key to effective collaboration; achieving it takes time, multiple interactions, and engagement. Trust building is helped by: an openness to taking risks; the capacity to be vulnerable; benevolence, and knowledge that one’s well-being and ideas will be cared for; reliability, and knowing how well colleagues can be counted on and predicted; competence, and the skills and competence to fulfil expectations; honesty and integrity to be relied upon; respect, genuinely listening and taking into account other’s views, even when they do not align with one’s own; personal regard, or the willingness to go the extra mile; and; personal integrity, to keep to their word (Bryk & Schneider, 2003; Covey, 2004; Hoy & Tschannen-Moran, 1999; Vangen & Huxham, 2003).

Vangen and Huxham (2003) identified that trust building is particularly crucial in the “nurturing” of collaborative arrangements. For Vangen and Huxham (2003), a state of vulnerability preceded entry into a collaboration when there was no history of

trust between participants. Their model of a ‘trust-building loop’, suggested that trust and collaboration are to a certain extent, self-sustaining; “With each positive outcome, trust builds on itself incrementally, over time, in a virtuous circle” (Vangen & Huxham, 2003, p. 8). Trust leads to more trust, and one might infer, better collaboration.

2.4.4 Collaboration is ‘happening, valuable, and difficult’

The literature establishes collaboration as a relatively formally occurring activity in that it is time-specific, goal oriented, and generally led. It requires a level of commitment, structure and planning towards a commonly held mission. It is also an activity that is more sophisticated, intense, and risk-laden than parallel and often confused concepts of coordination and cooperation. Therefore it benefits from learning about process components, particularly those encouraging structure, agency, and social capital.

Although, as described, collaboration has formed the subject of significant volumes of research, there is considerable justification in exploring its application in emerging contexts. Huxham (1996) summarises this through the heuristic of collaboration as ‘happening, valuable, and difficult’; as new contexts and initiatives emerge, so too do understandings of value and of the factors required to make it happen. The heuristic also provides a useful guide for subsequent reflection when applied to teacher collaboration and specifically, that associated with ILEs.

2.4.5 Connecting collaboration and space

Before moving to explore teaching and collaboration, there is a gap to address. The present study looks specifically at the notion of teacher collaboration in spaces defined as ILEs. However, as the review has shown, space forms something of an absent presence in the discourse. In the context of collaboration it is more broadly the ‘environment’ (including its structure, autonomy, and social capital) that is considered a factor influencing the success of collaboration; particularly where there is a history of collaboration in the community, the group is reliable and competent, and the local political and social climate is conducive to collaboration (Mattessich et al., 2001). The literature on collaboration is noticeably devoid of attention to physical space and place. As an interaction it is imagined occurring anywhere, spatialised metaphorically as

taking place in the ‘space-between’ participants. However, as Lawson (2001) notes, as soon as something occurs face-to-face, it is inherently spatial.

As an applied field, therefore, the design of dedicated ‘spaces for collaboration’ appears initially peculiar to workplace literature, and particularly associated with ideas of information flows, non-territoriality and activity-based work (ABW), acoustic separation, and individual agency to make spatial choices (see for example Allen & Gerstberger, 1973; Appel-Meulenbroek, Groenen, & Janssen, 2011; Castells, 1999; Feyard & Weeks, 2011; Gensler, 2008; Groves, 2010; Harris, 2015; Herman Miller Inc., 2008, 2012; Howells, 2002; Steelcase, 2010, 2015; Van Marrewijk, 2009; Veldhoen, 2005). In this regard spaces designed explicitly with collaboration in mind are purpose-built to help facilitate activities of brainstorming, collective creation of content, dialogue, and sharing of ideas. To do so, they need to consider: optimum group size; sightlines between participants and displays of information; ease of access to intuitive technology; ergonomics, including posture and comfort levels, surfaces to enable manipulation of post-it notes, drawings, images or other artefacts (Herman Miller Inc., 2008; Steelcase, 2010).

Additional connections are made in the corporate literature between space and collaboration. Attention is drawn towards: physical proximity to ease verbal and non-verbal communication; built workspace awareness (knowledge of where others are working, what other people are doing, and what they are going to do next) (Allen, 1970; Christensen & Mark, 2004; Gutwin & Greenberg, 2002; Heerwagen, Kampschroer, Powell, & Loftness, 2004; May, 1998; Oerlemans, Meeus, & Boekema, 2001; Rashid, Kampschroer, Wineman, & Zimring, 2006); digital and virtual infrastructure for mixed-presence teams (Beyerlein et al., 2003; Steelcase, 2010, 2015; Tang et al., 2005); and relative levels of spatial ownership, especially given it can support feelings of professionalism and autonomy, as well as belonging (Brown et al., 2005; Henkin et al., 2010; O'Toole & Were, 2008; Tian & Belk, 2005). Time in spatial settings is also a component. Herman Miller Inc. (2012) found collaborative encounters were often marked by brevity, with participants only seeking out purpose-designed spaces when participant numbers increased, or when concerned about disruption to others.

Research in this field reflects the idea that collaboration may be encouraged, engendered or optimised by attention towards spatial configuration. However this

conversation is generally found exclusively within the field of corporate and workplace literature. It is worth bearing in mind however, when considering the activity of collaboration between teachers.

2.5 Collaboration and teachers

The assumption that collaboration is valuable Huxham (1996) is undoubtedly one applied to the contexts of education, teachers, and teaching. It is articulated as integral to the success of contemporary teacher pedagogy, practice, and professionalism (Fullan & Langworthy, 2014; Hargreaves & O'Connor, 2017; Hattie, 2015b; Locke, Vulliamy, Webb, & Hill, 2005; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; Vangrieken et al., 2015). Hence the literature demonstrates multiple iterations of collaboration accompanying recent history in education. For the purposes of this review section, what is important to establish is the way collaboration ‘happens’, or translates into teacher contexts, and to establish the types of difficulties encountered. This lays the groundwork for shifting attention specifically into the context of ILEs.

Evidently there are factors, influences and considerations regarding the concept of collaboration that are commonly encountered regardless of context. For example, many of the issues highlighted in the literature about the principles of collaboration are replicated or reflected in studies investigating teacher collaboration. For example Meirink et al. (2010) observe, “in daily practice, teachers and researchers often use the word collaboration while what they do, or study, is actually cooperation” (p. 164). Similarly, for Vangrieken et al. (2015), “collaboration can be diverse and can show different depths, ranging from mere superficial to deep-level collaboration” (p. 35). Investigating the field in its entirety is beyond the scope of this review. Hence the conversation here is geared towards highlighting specific relevancies for teachers.

In doing this, four key ideas become apparent: (a) that significant value is ascribed towards teacher collaboration; (b) that collaboration can take multiple forms, either direct or indirect; (c) specific aspects of practice are understood to be impacted – positively or negatively – by the requirement or desire to collaborate; and (d) that there are factors or practices which more generally lead to successful collaboration between teachers. They are explored in turn below.

2.5.1 Value

Vangrieken et al. (2015) conclude their systematic review by stating “there is an ample amount of points of action and a diverse array of reasons for teachers to collaborate because all parties involved in education benefit” (p. 36). This echoes a recurrent trend in the literature determining that teacher collaboration is generally valued as positive. At macro-level initiatives and practices that engender collaboration between teachers are considered instrumental in contributing towards systemic educational change. At micro-level, antecedents to teacher collaboration are especially concerned with professional learning, pedagogical quality, and teacher efficacy, which in turn lead to increased student outcomes (Donohoo, 2017; Eells, 2011; European Commission, 2013; Goddard et al., 2000; Hargreaves & Fullan, 2012; Hargreaves & O'Connor, 2017; Hattie, 2015b). Hence policymakers and educationalists have called upon increased collaboration in the sector to support large-scale reform and sustained school improvement (Fullan & Langworthy, 2014; Goddard, Goddard, & Tschannen-Moran, 2007; Hattie, 2015b; Stoll et al., 2006).

Critically, engagement in collaboration does not automatically lead to raised student outcomes (Crow & Pounder, 2000; Hattie, 2012; Horn & Little, 2010; Johnson, 2003; Kelchtermans, 2006; Vescio, Ross, & Adams, 2008). Instead, Goddard et al. (2007) recognise the relationship as “likely indirect” (p. 892), influenced strongly by culturally embedded practices of collaboration, reduced isolation, willingness to take risks, and the learning that ensues between teachers as a result. As Goddard et al. (2007) assess, collaboration “encourages teachers to move beyond reliance on their own memories and experiences with schooling and toward engagement with others around important questions of teaching and learning” (p. 892). It is a factor reinforced through recent research demonstrating the significance of Collective Teacher Efficacy (CTE) (Donohoo, 2017; Donohoo, Hattie, & Eells, 2018; Eells, 2011; Hattie, 2012). CTE is defined as the “perceptions and judgements of a group of educators regarding their ability to positively influence student outcomes” (Donohoo, 2017, p. 102). According to Hattie (2012) CTE has an effect size of 1.57; far in excess of a myriad of student, teacher, school, curricula, teaching and home factors influencing student outcomes.

Collaboration is understood to hold additional value for teachers and school. It may result in increases in job satisfaction, morale, self-efficacy, motivation, reduced

absenteeism, and attitude towards the workplace. Each are particularly emphasised in healthy organisational climates, where levels of access to support, capacity to joint problem solve, and opportunity to experiment with alternate approaches is high (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005; Cohen & Bailey, 1997; Darling-Hammond, Aneess, & Ort, 2002; Donohoo, 2017; Flowers, Mertens, & Mulhall, 1999; Goddard, Hoy, & Hoy, 2004; Hackman & Oldham, 1980; Johnson, 2003; Piña, Martínez, & Martínez, 2008; Tschannen-Moran & Barr, 2004; Yisrael, 2008). Hence value is detected in the process of collaboration, further contributing towards the capacity and willingness of team members to work together in the future (Thomson & Perry, 2006; Van den Bossche, Gijsselaers, Segers, & Kirschner, 2006; Vangrieken, Dochy, Raes, & Kyndt, 2013).

When considering potential benefits of collaboration for teachers it is important to note that this is not a new line of thinking, although not all have been successful. Initiatives and structures to promote and leverage from teacher collaboration have a long history, constructed particularly from the perspective that professional isolation hampers systemic reform efforts (Datnow, 2011, 2018; Hargreaves & O'Connor, 2017, 2018). Early evidence of this emerges from the seminal work of Waller (1932) and Lortie (1975) both who documented teacher cultures of conservatism and endemic individualism. For Waller (1932) this related to teacher's desire for structure, routine and engagement primarily with children, along with a discernable level of rivalry between teachers. Lortie (1975) observed a similar individualism, in part related to the lack of feedback that teachers received. Teachers were reliant on their own educative experience – an “apprenticeship of observations” (p. 61) – on which to construct their own versions of practice.

Later, influential work by Little (1982, 1990a, 1990b) and Little and McLaughlin (1993) on workplace conditions identified ways that teachers worked together. In doing so it highlighted the presence of a professional “prevailing norm of collegiality” (p. 339) over and above teachers taking joint responsibility for student outcomes. Little (1990a) determined collegiality resulted in strong or weak ties between teachers (as a measure of spheres of influence over practice and colleagues). Evidence of weak ties was often present in storytelling and scanning for ideas, providing aid and assistance, and sharing of resource. To (Little, 1990a) although these were virtuous and may have resulted in good levels of work-force stability, teacher satisfaction, and levels

of performance, they were unlikely to account for high levels of innovation or collective commitment. This was produced through strong ties, exemplified by high levels of joint work and “encounters among teachers that rest on shared responsibility for the work of teaching” (p. 519). These were labelled “collegiality as collaboration” (p. 519). Little (1990a) comes to the conclusion that the greater the level of joint-work, the “greater the prospect for mutual influence among teachers” (p. 523). This is not the same as saying that putting teachers together will lead to strong ties, as Little (1990a) is keen to caution: “Close bound groups are instruments both for promoting change and for conserving the present” (p. 509).

The usefulness of ‘putting teachers together’ therefore forms a significant strand through the teacher collaboration literature. As Hargreaves and O'Connor (2017) describe, often subsequent collaboration initiatives have been mandated through policy initiatives and are not necessarily “strong, desirable, or impactful” (p. 77). Writing on collaboration and collaborative cultures within schools, an enduring concern has been the presence of ‘contrived collegiality’ rather than collaboration in schools (Bovbjerg, 2006; Datnow, 2011; Datnow et al., 2013; Hargreaves, 1991, 1992; Hargreaves & Dawe, 1990; Kelchtermans, 2006; Owen, 2014). Specifically, the concern is that while collaborative cultures are generated from within the profession, driven by a desire for school improvement and teacher professional learning, it is often external factors that lead to the imposition of collaborative ideals. So where collaboration is viewed as “spontaneous, voluntary, development-oriented, pervasive across time and space, and unpredictable” (Hargreaves, 1994, p. 195), contrived collegiality is “administratively regulated, compulsory, implementation-oriented, fixed in time & space, and predictable” (Datnow, 2011, p. 148). To Hargreaves (1994) “while collaboration and collegiality are not themselves the subject of national, state or provincial mandates their successful development is viewed as essential to the effective delivery of reforms that are mandated at national or local levels” (p. 187). Similarly, Datnow (2011) has since noted although such arrangements may provide a necessary starting point, with continual checking on collaborative processes, more contrived situations may usefully shift towards more genuine collaborative activities.

More recently, enactment of collaborative work between teachers has been conceptualised as collaborative professionalism (Hargreaves & O'Connor, 2017, 2018), noting that “Professional collaboration is descriptive – it delineates how people work

together in a profession. Collaborative professionalism is normative – it is about getting stronger and better professional practice together” (p. 4). It could be argued that ILEs provide a prime example for such iteration.

When considering the value of teacher collaboration history becomes a useful ally. A possible assumption made, especially when investigating a spatial model that presupposes it, is that it is inherently and consistently a ‘good thing’. There are two hazards here: (a) that the value of work teachers do individually may be devalued in the process, and; (b) that the collaboration will be successful, despite the human, cultural and political dimensions of work in schools (Blase, 1991; Datnow, 2011, 2018; Hargreaves & O'Connor, 2017; Pomson, 2005). History also demonstrates the multitude of interpretations and applications of teacher collaboration in schools, highlighting the range of breath and depth of conceptual application that Vangrieken et al. (2015) refer to.

2.5.2 Variation

In much the same way that collaboration has attracted different value over time, it has also led to a profusion of interpretations, terminology and applications (DuFour, 2004, 2007; Forte & Flores, 2013; Kelchtermans, 2006; Vangrieken et al., 2015). These applications include but are not limited to groupings described as: communities of practice (Lave & Wenger, 1991; Wenger, McDermott, & Snyder, 2002), Professional Learning Communities (PLCs) (Bolam et al., 2005; DuFour & Eaker, 1998; Wenger et al., 2002), data teams (Allison, Besser, Campsen, Cordova, Doubek, Gregg, Kamm, Nielsen, Peery, Pitchford, Ainsley, Ventura, & White, 2010; Besser, 2010; Schildkamp, Poortman, & Handelzalts, 2016), interdisciplinary teams (Brouwer, Brekelmans, Nieuwenhuis, & Simons, 2012; Crow & Pounder, 2000), teacher teams (Troen & Boles, 2012), departmental or subject teams (McGregor, 2003b), age-level teams (O'Neill, 2003), collaborative action research teams (Gordon, 2008), and project-based team, as well as team teaching or co-teaching teams (Beninhof, 2012; Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010; Villa, Thousand, & Nevin, 2008). Such terminology tends to refer to types of professional and workplace activity and groupings: mandated or voluntary, short or long term, focused on a specific initiative or more generically ‘collaborative’ (Vangrieken et al., 2013). It is surmised here that teacher collaboration in ILEs might add further to this list.

Within this categorisation the distinction can be made between ‘indirect’ and ‘direct’ forms of teacher collaboration (Gable & Manning, 1997), which align closely with the idea of strong or weak ties (Little, 1990a). ‘Indirect’ is used to describe intervention assistance and advice seeking, generally in a consultant/ consultee interaction, occurring before or after school or in other short-term encounters; and ‘direct’ used to refer to equally responsible teachers working together to plan and teach a group of students. In this regard, collaborative applications appear to be weighted one way or the other. PLCs for example “a group of people sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, growth-promoting way” (Bolam et al., 2005, p. 5), suggests a more direct form. However, communities of practice, as groups of people who share a concern, set of problems, or passion about a topic, “deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger et al., 2002, p. 4), are more suggestive of indirect collaboration. In the context of this review however, both are useful. Both are useful because although collaboration is assumed to be integral component of teaching in an ILE, the extent and level to which collaboration is desirable, activated and achieved in practice is unclear.

Value and variation are strong themes in the literature regarding the history, purpose, and relative success of various types of collaborative application in schools. Also apparent is that specific aspects of teacher practice are understood to be impacted – positively and negatively – by the requirement or desire to collaborate. The following section therefore draws attention to some of the impacts encountered through collaboration. It is anticipated that elements of these will be apparent in the context of collaboration in ILEs.

2.5.3 Impacts and implications: Opportunities and challenges

Vangrieken et al. (2015) extrapolate examples of both opportunities and challenges inherent in teacher collaboration in the most recent, high quality systematic subject review. Vangrieken et al. (2015) determines that challenges and benefits are apparent at student and school levels, with the majority seen at teacher level. For the purpose of this study three of the latter warrant specific attention, determined as those particularly implied in ILE settings. They are posited here as a series of circumstances or concerns that teachers engaging in collaboration – arguably the terrain inhabited by

teachers in ILEs – will be required to navigate and negotiate. What becomes apparent is that in an effort to resolve one issue, another is often revealed. Issues particularly concern isolation and autonomy, professional learning and the conditions required for it, efficiency and time.

2.5.3.1 Reduction of professional isolation

In the literature on teacher collaboration much is made of the idea of breaking down (metaphorical or physical) walls between teachers as a means to reduce levels of professional isolation (Conley & Cooper, 2013; Horne, 2004; Lee & Ward, 2013). In schools, isolation can result from a combination of structural, cultural, and built factors that together hamper opportunities for teachers to interact with and learn from colleagues (Butti, 2016; Clandinin & Connelly, 1996; Flinders, 1988; Hargreaves, 1994; Hatton, 1985a; Horn & Little, 2010; Johnson, 1990; Levine & Marcus, 2007; Lieberman & Miller, 1990; Little, 1990a; Lortie, 1975; Rosenholtz, 1989; Rosenholtz & Smylie, 1984). At the extreme, psychological isolation may also induce feelings of helplessness and frustration leading to burnout and withdrawal (Ostovar-Nameghi & Sheikahmadi, 2016).

However as Lortie (1975) identified, isolation may also be desirable, intentionally leveraged as a cognitive ‘conservation strategy’ to protect personal time and energy. It is this that Flinders (1988) refers to as “functional utility...not as a problem in need of redress, but rather as part of the teacher’s solution to the practical dilemmas of providing classroom instruction on a day-to-day basis” (p. 25). Similarly Hargreaves (1994), who has written extensively on the emotional nature of teachers’ relationships with colleagues (Hargreaves, 1998, 2001), refers to ‘elective individualism’, the inference being that isolation can constitute a voluntary and at times desirable state rather than simply an institutionally imposed one. Such a perspective illuminates the role of isolation in teaching and provides a potential challenge for models designed more firmly with collaboration in mind.

A consequence of professional isolation manifests through the literature as a high levels of individual teacher control and autonomy. As researchers have documented, autonomy has long been a component of teacher practice and professional experience, exacerbated by the predominance of a classroom-based environment (Horn, 2008; Lieberman & Miller, 1990; Rosenholtz, 1989). To Lieberman and Miller (1990)

this meant, “the classroom becomes a teacher's total world. It is a world that is unique and separate from the world of other adults. For six hours a day, five days a week, teachers live in an exclusive and totally controlled environment” (p. 156). Consequently “teachers develop all kinds of strategies and then meld them together into a style that is highly personal, if not idiosyncratic” (p. 153). Here, autonomy is portrayed as leading to a unique and personal way of working, an identity as a teacher developed through experience but precipitated through circumstance.

Of specific relevance to this study is that the discourse on collaboration emphasises the requirement for shared understandings and common approaches in order to maintain continuity and consistency. A tension arises therefore between the requirement for this, and the appropriateness or place of teacher autonomy on the other. It is also somewhat at odds with the capacity of teachers to ‘be an individual’ (Flinders, 1988; Little, 1990a). Critically however, Hargreaves (1994) makes the distinction between individualism and individuality, as characterised in the Lieberman and Miller (1990) quote. To Hargreaves (1994) individualism is “associated with bad and weak practice, teacher deficiencies, and things that needed to be changed” (p. 171), individuality more with independence and self-realisation. Navigation of the terrain between individuality and collaboration would appear an important element in non-classroom based environments. The ‘reduction of isolation’ discourse might also be interpreted as something of a contraposition: the benefit is seen to come from ‘not being isolated’, rather than from being with others.

2.5.3.2 Increase in professional learning

Teacher collaboration is strongly associated with affording professional learning; both formally through meetings, observations, discussion, and team teaching, and informally through incidental encounters. It includes learning through feedback, exchange of ideas, and opportunities to co-construct meaning (Admiraal, Akkerman, & Graaff, 2012; Doppenberg, den Brok, & Bakx, 2012; Gebhard, 1999; Hargreaves & Dawe, 1990; Knapp, 2010; Louis & Marks, 1998; Meirink et al., 2010). Hence, in the context of teacher collaboration, professional learning is a reciprocal knowledge production activity where teachers engage in dialogue and joint problem solving (Admiraal et al., 2012; Garavan & McCarthy, 2008; Hoekstra, Korthagen, Brekelmans, Beijaard, & Imants, 2009; Lave & Wenger, 1991; Meirink, Meijer, Verloop, & Bergen,

2009). For Van den Bossche et al. (2006), it is through this dialogic process of building and maintaining ‘mutual shared cognition’, which leads to increased performance.

Here, learning and collaboration are closely intertwined. Professional learning is a desirable outcome of collaboration. So too, learning will contribute to the ongoing improvement and evolution of the collaboration itself. Garavan and McCarthy (2008) capture this in the statement; “these systems exist to do work, but as they work they learn” (p. 452). Much of this learning occurs through engagement in what Ohlsson (2013) terms ‘collective reflection loops’ “whereby teachers talk and learn about problem solving and solutions to dilemmas, thereby providing valuable opportunities for team learning” (p. 306). Collective reflection loops enable group members to challenge and question approaches and strategies, including those more emotionally charged or conflicting. It is a concept comparable with ‘double-loop learning’ proposed by Schön (1983) and illustrating how learning can lead to modification and adaption of team processes and beliefs. However, teachers working together may require specific strategies and tools to leverage this type of learning.

Meirink et al. (2009) found that teachers often learned in the workplace as a result of critical individual reflection and also by involving colleagues in “particularly challenging or problematic situations” (p. 209). They also identified that observation of colleagues and listening to their experiences was an effective means of professional learning. Admiraal et al. (2012) evaluates this to be particularly beneficial for early career teachers. Moreover, Blannin (2018) determined that proximity and accessibility to colleagues in ILEs resulted in more ‘on hand’ learning related to the use of technology; specifically in this case the benefit was less to early career teachers, more to late adopters of technology. Furthermore, in terms of outcomes for students, Sun, Loeb, and Grissom (2017) assessed that high quality teacher colleagues had a ‘positive spillover’ effect on their peers in grade-level teams. This meant that student performance relates not simply to the quality of an individual teacher but also to those who influence them, and with whom they work. Increased collaboration appears to therefore create opportunity for professional learning and inquiry occur. However, additional factors are required for learning to result in changed practice.

Firstly, for practice to shift and benefit from the collaborative arrangements a level of criticality is required; proximity alone will not by lead to growth and learning.

Janis (1971) coined the term ‘groupthink’ to explain what happens to a group when participants are unable to critically discuss matters that arise. Similarly Ohlsson (2013) observed situations where, “in many of the sequences the characteristic way of talking on all of the teams manifests a spirit of agreement: friendly utterances met by confirming comments and sometimes followed by jointly laughter” (p. 303). Slavit, Kennedy, Lean, Nelson, and Deuel (2011) made a similar finding; they noted some teams “avoid cognitive conflict to maintain pleasant relationships” (p. 122). In the extreme Knapp (2010) note sometimes decisions can be made in groups that actually no one agrees, with due to incapacity to express personal feeling – the so called ‘Abilene paradox’ (Harvey, 1988).

Secondly, time needs to be dedicated to the learning process. Opportunities for learning are limited in collaborative teacher situations due to attention being focused overly on the practicalities of enactment (Datnow, 2018; Jindal-Snape, Davies, Collier, Howe, Digby, & Hay, 2013; Plauborg, 2009; Voogt, Pieters, & Handelzalts, 2016). As Plauborg (2009) observes “they often focused on solving practical problems in their everyday classroom practice and expanding their repertoire of actions rather than challenging and taking a critical and reflective approach to one another’s practice” (p. 31).

Thirdly, knowledge and normalised approaches for critical evaluation of collective learning may also be required. For example, Orland-Barak (2006) identify the use of convergent, divergent, and parallel types of dialogue to support understanding and knowledge-building about practice in collaborative situations. Convergent dialogues are useful in finding solutions to problems; divergent dialogues used to explore, compare and contrast, and make to connections across practice, often articulating beliefs and underlying values that informed practice; and parallel dialogues, with an emphasis on reflection, and ‘out loud thinking’. Additionally, the study by Levine and Marcus (2010) found the way meetings were structured supported different levels of decision making, reflection on practice, and information transfer depending on their level of structure and focus. Meetings guided by protocol, rather than rigid structured or informality, revealed higher quality openness and discussion from teachers about pedagogy and practice. There are implications therefore for how time is used in collaborative settings.

2.5.3.3 Considerations towards time

Time, or lack of it, emerges repeatedly through the literature as an aspect of collaborative work that can exert considerable influence on capacity to be effective. In this regard, time can be viewed in dual ways: the first pertaining to longer-term development and maintenance of collaboration, the second to its shorter-term day-to-day requirements.

Initially, as Tuckman (1965) has demonstrated, for any collaboration to be successful takes time. He identified that over the long-term teams move forwards (and backwards) between a number of developmental stages (forming, storming, norming, and performing) before reaching a point at which relationships, trust, and structures are firmly established and focus is confidently on group function. In the meantime outcomes for students were likely to be impacted when teacher teams got ‘stuck’ in the ‘forming’ stage, failing to develop as a cohesive team. To Tuckman (1965), successful transition through the stages and arrival at performance level could not be guaranteed. Furthermore, changes to team membership may disrupt team development and impact ongoing viability (Bell & Marentette, 2011; Main & Bryer, 2005).

Long-term team viability also leverages from the idea of collaboration as a ‘workplace condition’ (Kelchtermans, 2006), and extends measurement of effectiveness beyond performance, job satisfaction, and team cohesion (Bell & Marentette, 2011; Hackman, 1990; Sundstrom, De Meuse, & Futrell, 1990). Viability has been defined by Bell and Marentette (2011) as a team’s “capacity for the sustainability and growth required for success in future performance episodes” (p. 275). As Bell and Marentette (2011) notes the capacity of a team to be well positioned for the future is determined by the team’s; composition, and the extent to which it has the knowledge and skills to deal with anticipated demands; continued motivation to put effort into the team’s success despite competing demands; and team strategies to enable ongoing adaptability.

Viability also dovetails with entitativity: being the presence of interdependence, ‘teamness’, and the sense of being an intact social entity (Cohen & Bailey, 1997; Ohlsson, 2013; Vangrieken, Dochy, & Raes, 2016; Vangrieken et al., 2013). For (Vangrieken et al., 2016) a high levels of entitativity is a strong predictor of team learning, in turn, supported by a sense of psychological safety. Much of this is supported by strategies to mitigate risk, and build relational trust between teachers

(Bryk & Schneider, 2003; Stoll et al., 2006); not always an easy goal to achieve when commonly collaborative teacher teams are constructed externally in a ‘contrived’ manner (Hargreaves, 1994). Hence within ILE where ‘deprivitisation’ is fundamental, attention needs to be paid to the way this is enacted and mediated through cultural norms (Campbell et al., 2013).

In the short term, sufficient time needs to be allocated towards collaborative activity and is critical for successful collaboration. Researchers have repeatedly reported teacher’s concerns with the extended time required to collaborate effectively (Datnow, 2018; Forte & Flores, 2013; Levine & Marcus, 2010; Voogt et al., 2016). Teams who are scheduled to meet consistently and frequently, and have established norms of procedures, provide opportunities for individual as well as team planning foster greater flexibility and autonomy (Conley, Fauske, & Pounder, 2016; Crow & Pounder, 2000; Main & Bryer, 2005; Meirink et al., 2010). Specifically, in the Flowers, Mertens, and Mulhall (2000) study, effective teams were found to dedicate at least 30 minutes four times a week towards learning how to work together, as well as tasks and planning resulting in positive views of team quality perhaps because of increased opportunities to work out differences and determine common ground.

One additional time-related aspect of teacher collaboration is that espoused though relative efficiency and productivity gains made available through the distribution and delegation of tasks (Cohen & Bailey, 1997; Conley et al., 2016; Friend et al., 2010; Johnson, 2003; Steelcase, 2015). This is associated with the opportunity to plan and teach together (Egodawatte, McDougall, & Stoilescu, 2011), the division of labour to align more closely with teachers’ strengths and preferences (Brandenberger & Womack, 1982), the elimination of duplication (Hargreaves, 1994). Hence collaboration is sometimes perceived as affording efficiencies for teachers. This is particularly connected with workload issues stemming from a general perception that teachers’ work is becoming increasingly complex, intense, cognitively loaded, and consuming (Ballet & Kelchtermans, 2009; Benade, 2017a; Easthope & Easthope, 2000; Feldon, 2007). On the face of it therefore this appears a positive aspect of collaborative work. However, further investigation shows it not to be so clear-cut.

Indeed, other researchers have reported much the opposite, drawing attention to the expansion of individual roles beyond areas of expertise, uneven distribution of

work, and additional time required for meetings (Bauwens, Hourcade, & Friend, 1989; Bovbjerg, 2006; Campbell et al., 2013; Crow & Pounder, 2000; Kodkanon, Pinit, & Murphy, 2018). Furthermore, as Gulati et al. (2012) found, ineffective communication and leadership within a group may precipitate coordination failures and in turn create inefficiencies. In addition, as previously established, the phenomenon of ‘social loafing’ may also be apparent in collaborative situations (Liden et al., 2004; Williams et al., 1981).

The ‘collaboration leads to efficiencies’ argument is therefore slightly misleading. On one hand it follows the logic that ‘many hands make light work’, but on the other that it is by no means given. A further concern is that an argument for collaboration based on increased productivity and efficiency perhaps misses the point, with a view of collaboration as a simple, linear system for time saving rather than significant engagement with pertinent problems (Gray, 1989; Johnson, 2003). Perhaps what might be more pertinent in the current study is instead to understand the efficiencies and additional factors that lead to better teacher collaboration.

2.5.4 Factors leading towards successful collaborative in teacher teams

There are factors that lead to the success of collaboration regardless of context. For example, sufficient time to engage in collaborative tasks, a favourable culture, a shared vision, open and frequent communication, mutual trust, and individuals with the flexibility, willingness to compromise and contribute (Mattessich et al., 2001). These are not peculiar to groups of teachers. What is peculiar however, is the type of work teachers are engaged in and the relationship between that and professional collaboration.

As emphasised through the literature, effective teacher collaboration is therefore reliant on more than simply good collaborative process factors to be successful. Additionally, broad layers of contributory factors exist at organisational, team and personal levels (Vangrieken et al., 2015). Prioritisation is problematic; although without specific organisational and cultural conditions, as well as application of effective change management strategies (Armenakis, Harris, & Mossholder, 1993; Bartunek & Moch, 1987; Fullan, 2007; Holt, Armenakis, Feild, & Harris, 2007; Osborne, 2016), it is unlikely collaboration will flourish.

Whole-school culture has a considerable bearing on the effectiveness of individuals and groups within school (Barth, 2002; Hallinger & Heck, 1998; Nias, Southworth, & Yeomans, 1989; Strahan, 2003). Culture helps maintain organisational priorities and parameters that focus work and collaboration on student learning, in essence ‘setting the tone’ for collaboration to occur (Kelchtermans, 2006; Slavit et al., 2011; Vescio et al., 2008). To Kelchtermans (2006) the viability of teacher collaboration was so contingent upon organisational culture that “the cultural and structural working conditions in schools determine and mediate actual teacher collaboration” (p. 222).

Organisational or contextual factors therefore establish foundations, and promulgate collaboration as a school methodology and priority. Mechanisms such as training and feedback loops, and provision of resources for ongoing collaboration are found to be effective support structures (Sundstrom et al., 1990; Vangrieken et al., 2015). Vangrieken et al. (2015) refer to these collectively as ‘guidance factors’. Moreover, they include the role taken by the principal to balance requirements across the school, and to undertake the monitoring of collaborative relationships. Reed and Groth (2009) assesses this might include external facilitation; “helping teams learn how to collaborate well...building their trust in each other...[creating] a safe and constructive environment for teachers to reflect on their practices and learn from one another” (p. 18). This need specifically arises when adapting to an increased degree of joint responsibility encountered when moving from independent to interdependent settings (Glazier et al., 2017).

At an individual teacher level, the requirement for ongoing collaboration may also emphasise the desirability of skills and disposition that have been less emphasised in the past. Aside from a general willingness to collaborate a number of specific and desirable skills emerge through the literature. These include a commitment to collaboration (Conley et al., 2016), cognisance of the potential benefits and challenges, good communications skills, and knowledge of team processes (Main & Bryer, 2005; Stephenson, Warnick, & Tarpley, 2008). Researchers have also identified that as conflict is inherent to collaborative situations, teacher capacity to solve problems and ‘sense-make’ is critical. It is highlighted as an integral component of community, which in turn may lead to mutuality, reciprocity, and individual and team growth (Achinstein, 2002; Greenwood, 2016; Gunn & King, 2003; Johnson & Johnson, 2009; Weick, 1995).

As (Achinstein, 2002) evaluates, “Practitioners who understand the micropolitics of collaboration also may be less alarmed when issues do arise, learn to navigate them in more overt ways, and more explicitly discuss the kinds of communities they went to maintain (p. 450). Accordingly, Meirink et al. (2010), drawing on literature about group dynamics also posited that group cohesion was a significant factor determining group effectiveness for teachers. Group cohesion is defined as, “the ‘glue’ that holds a small group of people together” (p. 165), with the inference that highly cohesive groups are more capable of achieving goals and problem solving than less cohesive ones.

At a team level, successful teacher groups have clearly articulated roles within team, distribute responsibilities equitably, work proactively on teaming skills, remain flexible and adaptable to accommodate changes to curriculum and pedagogy, share responsibility for the success of the team, empower decision-making, engage in regular, open, and honest communication; address differences promptly, share clear and attainable goals, encourage participation, and leverage colleagues’ expertise (Crow & Pounder, 2000; Main & Bryer, 2005; Meirink et al., 2010; Park, Henkin, & Egley, 2005; Vangrieken et al., 2015; Yisrael, 2008). They are also likely to benefit from having experienced leaders, although in circumstances where leadership is not an organisational feature people are sometimes unwilling to take on leadership responsibilities due to perceived workload issues, or feelings they lack the team’s backing to lead (Crow & Pounder, 2000).

With this in mind Flowers et al. (2000) makes an uncommon reference to an optimum size teacher team, determined primarily by the number of students that teachers were collectively responsible for. Hence to Flowers et al. (2000), “team interactions are also more positive among teams with smaller team sizes (i.e. 90 or fewer students)” (p. 55). There is little consistency around this factor and context is important. For example, Truijen, Slegers, Meelissen, and Nieuwenhuis (2013), in research with secondary vocational education managers determined a team of six to ten teachers was optimal. Previously, in more general team situations Hackman and Vidmar (1970) considered between four and five (precisely 4.6) people was the ideal number, after which coordination became increasingly complicated and conflict increasingly evident. However they also found that larger teams retained the capacity to break into smaller units for specific tasks. Regardless of group size group effectiveness is

enhanced when team members bring an adequate amount of effort to bear on the work at hand, when they apply sufficient knowledge and skill to the work the group is undertaking, and when they employ ‘task performance strategies’ that are appropriate to the work and organisational setting such as ongoing monitoring, and establishment of group norms (Conley et al., 2016; Crow & Pounder, 2000; Hackman & Oldham, 1980).

This review section established teacher collaboration as a generally positive and valued activity for teachers to engage in. It presented examples of commonly encountered types of collaborative activity in schools varying from direct to indirect forms. It described a number of significant areas impacted by the decision to work collaboratively and defined some practices that could support teachers.

The described factors, implications, considerations and challenges presented here relate to the application of teacher collaboration in schools. They are primarily couched in terms of context, culture, and capacity, with attention towards factors that help and hinder collaborative work. There are two areas missing from this discussion: firstly, concerned with the relationship between teacher collaboration and space: the second, that of the nature of collaboration in conjunction with teaching, as opposed to teachers. Both are critical in the context of the current study. Both are addressed in the following section.

2.6 Connecting teacher collaboration with space

The final review section coalesces the review by burrowing further into the concept of teacher collaboration. It looks specifically at its relationship with space, and the context of ILEs. In doing so it addresses the two gaps highlighted in the previous literature set, helping the research to arrive at a point for explicit ongoing investigation.

The first gap relates to the location of collaboration in the discourse, often portrayed as an activity kept separate from the interface with students. This section therefore looks specifically at practices of team teaching and co-teaching as collaborative pedagogical strategies. Concepts of team teaching and co-teaching (often used synonymously), referring to forms of teaching with colleagues at the interface with students, have re-emerged (or are assumed) in the discourse as broadly applicable to

ILEs (Alterator & Deed, 2013; Gislason, 2009b; Mackey, O'Reilly, Jansen, & Flietcher, 2017). Neither is a new idea; both warrant attention in the current study.

The second gap pertains to the nature of teacher collaboration contextualised in the built environment. Less apparent in this literature set are aspects of teacher collaboration that include a spatial connection other than that spatialised through face-to-face encounters (Lawson, 2001). With rare exceptions such as Spillane, Shirrell, and Sweet (2017), the discourse of collaboration is separated from that of space. Sometimes it is noted in passing as part of broader conversations about social structure, but not really considered in depth (see for example Priestley, 2011). This section interrogates recent relevant spatial research and extrapolates findings pertaining to collaboration. They relate particularly to spatiality, relationality and materiality.

These two gaps are fundamental in the context of this study, as both appear subsumed in the discourse surrounding ILEs. To bring the review towards a conclusion this section also draws on previous sections, particularly in conjunction with aspects of professional isolation, professional learning, and considerations towards time.

2.6.1 Collaboration and teaching

Vescio et al. (2008) observes that participation in a collaborative community alters teachers' approach to work and represents a "fundamental shift in the habits of mind that teachers bring to their daily work in the classroom" (p. 84). In the Vescio et al. (2008) study 'community' refers to a PLC in which teachers considered their practice improved as a result of teacher learning, decision-making, collaboration, and a focus on student learning. Like many descriptions of teacher professional community though it highlights collaboration as something that teachers move in and out of from time to time. The connection is with people not place. Consequently, in such scenarios, teacher collaboration is generally considered in the literature to be happening 'elsewhere': away from the interface with students and teaching. More often, collaborative activities are described to occur in staffrooms, offices, and team meeting rooms (Forte & Flores, 2013; McGregor, 2003b). Hence collaboration often constitutes a 'visited activity'.

An exception to this is the collaboration engendered through approaches where teachers are engaged in teaching together, or at least relatively in situ. Most obviously these are enacted through strategies of team teaching and co-teaching. These are important in the discourse surrounding ILEs, as aspects of both appear mirrored in

contemporary settings. Although it may be assumed that both involve a degree of collaboration to enact effectively.

2.6.1.1 Team teaching in open plan settings

Shaplin and Olds (1964) described team teaching as “a type of instructional organisation, involving teaching personnel and the students assigned to them, in which two or more teachers are given responsibility, working together, for all or a significant part of the instruction of the same group of students” (p. 15). It emerged as a response to the shortage of well-qualified teachers in American secondary schools amid the rapid surge in post-war enrolments of students; effectively a means of teaching larger groups of students with fewer teachers (Brunetti et al., 1972; Geen, 1985; Trump, 1959; Wraga, 1997). It was also a strategy designed to service particular educational aims. For students, a strategy to increase ‘student-centredness’, individualised and diverse opportunities, stimulation from being in a larger group of peers, and access to a range of teacher expertise. For teachers, increased capacity and flexibility to enable pedagogical differentiation, opportunity to develop groupings based on interest, ability or achievement, efficiencies through creating longer blocks of time, increased autonomy, mutual professional support, increased job satisfaction; additional time for preparation; the opportunity to plan alongside colleagues, opportunity to specialise, and attractiveness to innovative teachers (Anderson, Hagstrom, & Robinson, 1960; Borg, 1967; Brunetti et al., 1972; Easterby-Smith & Olve, 1984; Freeman, 1969; Friend, Reising, & Cook, 1993; Geen, 1985; Meehan, 1973; Moon, 1983; Seyfarth & Canady, 1973; Shaplin & Olds, 1964; Trump, 1959; Vars, 1966; Warwick, 1971).

Martin (1975) described environments for team teaching as open, closed, and mixed. Open, where teachers were working together with one hundred students in a space where all were visible to one another; closed, where each teacher had a classroom; and mixed, where moveable walls enabled temporary partitioning and allowed for degrees of visual separation from colleagues. Of these, team teaching became most closely associated with the open-plan school movement of the 1960s and 1970 (Cohen, Deal, Meyer, & Scott, 1979), where open space architecture was intended, “to enable cooperation among teachers”, and indeed, “requires it for its effectiveness” (Brunetti et al., 1972, p. 88). An extract from Brunetti et al. (1972), although long,

provides some indication as to the intentions and requirements of teaching in the open space:

Potentially, the open-space school can have a profound effect on the teachers' work environment. Teachers are no longer organisationally isolated but must cooperatively plan the activities of several groups of students... While open space has provided a functional physical environment for a cooperative task structure such as team teaching, it also reduces the physical isolation of the teacher; increased visual and acoustical contact increases the need to coordinate and schedule activities so as to minimize potential conflict within the team and to control student noise and activity levels so that disruptions are minimal. (p. 86)

The passage forms a rare moment in the Brunetti et al. (1972) study in that there is a sense of teaching going on with colleagues in a spatially proximal manner. The inference otherwise is less of working together, more of one working in coordination with one another, with care taken to reduce undue distraction, disturbance or interpersonal friction. Teachers were thus required to conform to a schedule and limit noise and activity level; "if one class wants to sing, for example, time must be found when the adjacent group is not engaged in exploring the subtleties of the new math" (p. 94). To Martin (1975) this formed an element of the 'negotiated order' required in team teaching situations.

The increased visibility apparent in open space architecture intended originally to aid team teaching through fostering of professional relationships and learning. However, it is regularly encountered as a barrier for teachers in the literature, at times resulting in the deployment of 'camouflaging' or avoidance strategies. Galton et al. (1980) surmised two extremes of team-teaching scenarios, and portrayed them as both deliberate and subtle ways to reduce interaction with colleagues. Firstly, a scenario in which teachers occupy a purpose-built open plan space but continue to teach as if they were in their traditional classroom. Hence researchers reported strategically placed 'anti-scrutiny' bookshelves, and room dividers, creating ostensive, pseudo-classrooms within a broader environment (Galton et al., 1980; Tanner & Lackney, 2006). Secondly, a scenario in which teachers shared space but for many purposes elected to teach 'elsewhere', for particular subjects like music, drama, or physical education. Hatton

(1985a) refers to this as an organisational form that teachers adopt by way of 'alternative cover' in order to "cope with the challenge to prior dispositions regarding privacy autonomy and individualised practices" (p. 236).

Assessment of early evaluative research on team teaching suggests the negative outweighed the positive. Easterby-Smith and Olve (1984) for example, considered despite initial intentions some versions of team teaching had left "very little opportunity for student-centredness" (p. 235), and made distinction between the design and implementation (or delivery) phases of team teaching. Furthermore, they identified the need for teachers to have strong team capability, excellent interpersonal skills, group awareness, willingness to discuss problems, and capacity to give or receive feedback. Additionally, it was apparent some teachers were overly competitive; "the moral is to choose your team carefully and beware of Prima Donnas" (p. 236). Finally, they identified that hostile attitudes towards innovation could well make the team's task more challenging. Similarly, Brunetti et al. (1972) considered that interpersonal relationships among teachers were critical towards determining the ongoing viability of the team.

It is repeatedly apparent through the literature teachers might well be co-located in an open plan classroom, yet not teach with a team-teaching methodology. The bulk of observations and findings appear concerned less with the particular space, more to do with the logistics of operating together within it. Regardless of the context, that team teaching occupied, it systemically increased organisational complexity. It came in the form of organisational structure, differentiation of learning, use of technology (instructional materials), and the extensity of teaming (the extent to which collaboration was engendered across the organisation) (Cohen et al., 1979). In some cases, additional innovations such as non-grading (students working at ability level and proceeding at their own pace), or heterogeneous grouping were also being employed (Martin & Pavan, 1976).

Brunetti et al. (1972) also highlighted the increasing complexity evident within structural and organisational relationships, and impact on levels of control felt by teachers. This did not eventuate in an expected loss in teacher's autonomy, as was hypothesised; instead, teachers in open-space schools reported a greater sense of control over their teaching decisions than colleagues in traditional classroom settings. Brunetti

et al. (1972) put the paradox down to the idea that an increase in flexibility, the capacity to break students up into a variety of group sizes for instruction, and for teachers to work on particular areas of the curriculum in depth, resulted in it being “experienced as increased control over one’s own activities” (p. 91).

The way space manifests in the literature in connection with team teaching is connected primarily with relational and organisational aspects prompted by teacher-teacher proximity, rendering space a backdrop (and at times an inconvenient or uncomfortable one) for activity, rather than an integral component of practice. Seyfarth and Canady (1973) reported that teachers were attracted to team teaching “by the novelty” (p. 422) but would lose interest “if they encounter problems with which they are not prepared to cope” (p. 422). Hence in their observations, “it is not uncommon for a school faculty to try team teaching for a year or two and then abandon it” (Seyfarth & Canady, 1973, p. 420), a finding later confirmed by (Cohen et al., 1979). References to team teaching approaches in the literature diminish significantly from the mid-1980s.

2.6.1.2 Co-teaching in classroom settings

Collaborative approaches resurface in the literature in the form of co-teaching; initially an inclusion strategy to ‘mainstream’ students - developed in response to concerns over gaps between general and special education teaching - and activated through general and special education (and sometimes with English for Speakers of Other Languages) teachers working alongside one other with joint responsibility for a cohort of students (Bauwens et al., 1989; Friend et al., 1993; Walther-Thomas, 1997; York-Barr, Ghore, & Sommers, 2007). There are three key distinctions to be made from team-teaching: (a) teachers are co-located during teaching activities, (b) the setting is invariably a classroom, and (c) several models have been developed to illustrate pedagogical variations, giving language to the practice.

Spatially, the assumption is co-teaching takes place in an individual classroom setting (see for example Bauwens et al., 1989; Benninghof, 2012; Cook & Friend, 1995; Friend & Cook, 2013; Friend et al., 1993; Murawski & Swanson, 2001; Potts & Howard, 2011; Villa et al., 2008). A search through literature for references co-teaching and physical learning environment, (using keywords ‘space’, ‘environment’, ‘classroom’, and ‘furniture’), reveals limited examples that would suggest otherwise.

Models of co-teaching described in the literature present a range of organisational approaches. Each describes a set of teaching scenarios adopted by a pair of co-teachers; involved in either (a) teaching, (b) supporting their colleague to teach, (c) providing individual students with assistance, (d) observation and data gathering, or (e) small-group instruction (Beninghof, 2012; Friend et al., 1993; Villa et al., 2008). Table 2.8 summarises a typology of five approach categories, showing teacher role and organisational method: *assistive, data gathering, coordinated, teaming, and rotating*.

Table 2.8. Comparison of team teaching types.

Co-teaching variations	Friend and Bursuck (2009)	Villa et al. (2008)	Beninghof (2012)
<i>Assisting/Supporting</i> <i>One teacher in a lead role, the other in supportive role</i>	<i>One teach/ one assist</i> – Teacher A leads. Teacher B travels around the room offering individual assistance	<i>Supportive</i> – Teacher A leads. Teacher B travels around the room offering individual assistance	<i>Adapting</i> – Teacher A leads. Teacher B ‘wanders’ providing adaptation as needed
		<i>Complementary</i> – Teacher A enhances the teaching of Teacher B e.g. through modelling note-taking, or paraphrasing	<i>Speak and aid</i> – Teacher A leads; teacher B adds visually or verbally <i>Lead & support</i> – Teacher A does advanced planning in isolation; Teacher B involved in implementation and assessment
<i>Data gathering/ observing/ noticing</i>	<i>One teach/ one observe</i> – Teacher A leads large-group instruction while Teacher B observes and gathers specific academic, behavioural or social data on students		

Coordinated
Both teachers
working with groups
of students

Parallel – both teachers plan the instruction. The class is divided into two for simultaneous teaching

Alternative – Teacher A teaches most students; Teacher B works with a smaller group for enrichment, assessment, pre-teaching etc.

Parallel – Teacher A & B work with different groups (even or uneven) on the same or different content

Parallel – Class is divided into two heterogeneous groups. Teachers take half each

Station – Teacher A teaches majority; Teacher B works with small group

Skills groups – Students divided into ability groups and provided levelled instruction

Learning style – Teachers plan lesson and divide responsibility according to learning style (Gardner, 1993)

Complementary skills – Teacher A focuses on curriculum; Teacher B on complementary skills

Teaming

Team teaching (Teaming) – Teachers share instruction of large-group & take turns leading a discussion, presentation or demonstration

Team teaching – Teachers share responsibility for the planning, teaching and assessment of all the students. Teaching is undertaken in partnership.

Duet – Both teachers share the entire instructional process.

<i>Rotating</i>	<i>Station</i> – Students rotate around 3 or more nonsequential stations, working with a teacher at two ‘stations’ & independently at the others
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Note. Adapted from Friend and Bursuck (2009), Villa et al. (2008), and Beninghof (2012).

Notably, emphasis in the various descriptions is on the teachers’ role rather than that of students; the inference being that students are participating in a ‘lesson’ with one of the teachers (rather than engaged in an independent task); the exemption being station teaching (Friend & Bursuck, 2009). Furthermore, descriptions of teachers’ positioning in the classroom suggests that instruction is often from the ‘front’; the exception to this being when the second teacher is working with a small group, or when students are rotating through a station activity. The movement of the second teacher during ‘one teach/ one assist’ has been described as ‘drift’ (Friend et al., 1993), or ‘circulate’ (Friend et al., 2010).

Contrary to the aspiration of Villa et al. (2008), a significant consequence for typology development is in the hierarchical way the role of the ‘second teacher’ - more usually the special education teacher - is described, depicted and realised. In their meta-synthesis of thirty-two papers on co-teaching in inclusive classrooms, Scruggs, Mastropieri, and McDuffie (2007) found the ‘one teach, one assist’, the predominant model. It “characterised the special education teacher’s role as an assistant or in some way subordinate” (p. 413) where the special education teacher provided curriculum adaptation and remediation while the ‘teacher’ provided content knowledge, and was ‘in charge’. It is a reoccurring theme (Austin, 2001; Beninghof, 2012; Pancsofar & Petroff, 2016; Rice & Zigmond, 2000), and one which prompts questions over classroom ‘ownership’ (Scruggs et al., 2007), and level to which co-teaching, as a model of collaboration, diverts rather than focuses teachers’ energies and effort (Hargreaves, 1994).

Predominantly, evaluations of co-teaching focus on the impact on learning outcomes for students under a model of inclusion (see for example Murawski & Swanson, 2001). Studies have also focused on teacher-teacher relationships, and

teachers' experience of co-teaching, highlighting: increased time to plan; flexible use of instructional time; opportunity to implement teaching techniques and employed by colleagues; providing an additional 'pair of eyes' on students' needs; and increased respect for teacher colleagues (Austin, 2001; Hurd & Weilbacher, 2017; York-Barr et al., 2007). The York-Barr et al. (2007) study also raises some critical points in terms of 'desirable qualities of collaborative team members', which include sharing a commitment, being flexible, student-centred, open to change, and appreciative of insecurities over the 'public' nature of the teaching environment. In addition studies have found a need to develop approaches to planning, professional learning, instructional belief, parity, classroom routines, discipline and addressing 'pet peeves' (Cook & Friend, 1995; Scruggs et al., 2007), the latter perhaps prompting description of co-teaching as metaphorical 'marriage' (Kohler-Evans, 2006; Murawski, 2010; Villa et al., 2008).

2.6.2 The influence of space and spatiality on teacher collaboration in ILEs

Considered pedagogically, contemporary ideas of teacher collaboration in ILEs share multiple similarities with intentions surrounding the previously described pedagogical practices of team teaching and co-teaching. Each strategy was originally conceived with teacher learning as well as student learning in mind. Each was conceptualised as a means to foster greater levels of pedagogical differentiation and variation. Both involve a degree of collaboration to enact. In these circumstances collaboration is no longer a 'visited activity'. It brings space and spatiality firmly to the forefront of the discourse.

The literature investigating spatial change in school, and ILEs specifically, acknowledges that collaboration has a role to play in pedagogical enactment. Moreover those teachers will be engaged in some form of team teaching relationship. However, the inherent requirements for approaches related to team teaching and co-teaching in ILEs, along with the resulting possibilities engendered through collaboration, have to date formed only a minor component in a much broader discourse; one which has tended instead to focus on spatial design, contemporary pedagogy, professional transition, implementation, and adaptation (see for example Alterator & Deed, 2013; Byers et al., 2014; Campbell et al., 2013; Deed et al., 2014; Imms et al., 2016a; Saltmarsh et al., 2015).

Collaboration in ILE settings requires adaptation and adaptability. To Alterator and Deed (2013) “adaptability is not simply preferred; it is necessary” (p. 327). However, the specific requirements of adaptation to teacher collaboration within contemporary ILE settings are more challenging to discern in the literature. It is clearly required, but presented only in broad terms. Given the roles of adaptation and adaptability in spatial transition this section therefore interrogates recent relevant spatial research and extrapolates findings pertaining to implication of spatial transition on teacher collaboration. They are posited as a series of phenomena accompanying collaboration in ILEs: visibility, proximity, flexibility, relationality, and materiality.

2.6.2.1 Collaboration in ILEs: Visibility

A fundamental motivation behind the shift towards ILEs, often captured in the sentiment of ‘breaking down the walls’, is that related to benefits perceived through the deprivitisation of teacher practice. Here deprivitisation is taken at its most literal, as enhancing visibility into, and of, teacher practice; a level up from that described in the literature about PLCs. Hence deprivitisation relates not only to what teachers describe about their practice, or what they are invited to observe, but also what they may see on a day-to-day basis. As (Campbell et al., 2013) notes, in ILEs “individual teacher practice became exposed to the witness and critique of others in the teaching group”. For those teachers used to teaching in a traditional classroom setting this may require some getting used to.

One of the reasons it may require getting used to, is associated with risk over what colleagues observe. This is associated in the literature with fear of failure, scrutiny, capacity to control class, and curriculum knowledge (Blackmore et al., 2011b; Hayes, 2006; OECD, 2013). For teachers in the Alterator and Deed (2013) study this manifested as retaining “no privacy in your lesson” (p. 322), and a feeling of “much more pressure on us to perform” (p. 322). As a consequence, Campbell et al. (2013) considered deprivatised practice needed to be enacted and mediated through cultural norms. When not mediated Saltmarsh et al. (2015) found that ‘anti-scrutiny’ devices, akin to those reported previously, were utilised “to block the views of colleagues who were disliked or mistrusted” (p. 8).

In situations where deprivatised practice was normalised, increased visibility afforded by closer proximity and fluid use of space led to increased informal exchanges

between teachers, access to ‘just in time’ learning, and teacher positivity (Alterator & Deed, 2013; Blannin, 2018; Campbell et al., 2013). Also, to Prain et al. (2014), deprivitisation enabled teachers to “consider new ways to imagine and enact curricula” (p. 198). Furthermore, in the Campbell et al. (2013) case study, teachers reported a level of ‘incidental professional learning’ which involved often mimicking or appropriating techniques and ideas from one another. Specifically, it was easier for less experienced teachers to see how more experienced colleagues handled particular learning and behaviour situations with students. Campbell et al. (2013) concluded that “new cultures of practice emerged that came to see teaching as a shared practice” (p. 212).

An additional opportunity for teachers relates to the modelling of collaboration, sometimes ‘live’ in front of students. Alterator and Deed (2013) found that the spatial and temporal immediacy afforded by ILE spaces led to increased communications, negotiations and problem solving between teachers. Hence, “the immediate resolution of critical moments amplifies the changing nature of hierarchy” (p. 325).

2.6.2.2 Collaboration in ILEs: Proximity

The idea of collaboratively occupied space playing a role in professional learning and supporting collaboration is a thread that runs through the literature beginning with the very earliest iterations of shared space in corporate settings. In particular it relates to increased interactions when people are close to one another, discernable nuances of body language and non-verbal forms of communication, and growth in workspace awareness – the knowledge of where others are working, what other people are doing, and what they are going to do next (Appel-Meulenbroek et al., 2011; Christensen & Mark, 2004; Gensler, 2008; Gutwin & Greenberg, 2002; Heerwagen et al., 2004; Herman Miller Inc., 2008, 2012; Steelcase, 2010). In doing so it illuminates the benefit of teacher-teacher proximity as a condition of collaboration (Amin & Wilkinson, 1999; Hansen, 2015; Katz, 1994; Knobens & Oerlemans, 2006; Morkertaite & Sekliuckiene, 2016; Oerlemans & Meeus, 2005), not usually an aspect of school space that comes under investigation.

An exception is the study by Spillane et al. (2017) which investigates the concept of propinquity in teaching, through a lens of social networks. Propinquity, concerned with ‘nearness’ (and used interchangeably with proximity), was found to support work-related ties between teachers by “reducing the costs involved in making a

connection and increasing exposure to colleagues, which creates opportunities for unplanned encounters” (p. 162). The research clarifies the idea that although teacher-interaction are often investigated in terms of organisational norms and formal organisational arrangements, there is benefit from understanding the role that space plays in such encounters.

2.6.2.3 Collaboration in ILEs: Flexibility

ILEs have generally been conceived and designed with flexibility in mind. To Saltmarsh et al. (2015) however, levels of structure, such as timetabling and resource management are required which may extend beyond those required in traditional classroom settings. Here, structure was in response to the apparent “absence of structure within the open-plan space” (p. 11). An over-emphasis on structure, through timetabling and scheduling, meant the flexibility required to meet an individual student’s needs better was potentially lost. Teachers noted a loss of opportunity to extend sessions as they saw fit, due to the perceived knock-on effect on colleagues.

Therefore to Saltmarsh et al. (2015) there was evidence of, “tensions between perceived needs for flexibility and experimentation in these spaces, and traditional discourses that see structure and order as both conducive to learning and as a demonstration of professional competence” (p. 10). Their study revealed how teacher teams prioritised the structure of the day “maintaining orderly progression through extensively planned and often highly choreographed activities” (p. 10). Although clearly a necessity, the review by Blackmore et al. (2011b) identified little research existed considering how teachers and students negotiated and created relationships, structures and processes in using new learning spaces.

2.6.2.4 Collaboration in ILEs: Relationality

A high level of organisation is considered a requirement for creating any quality learning opportunities in schools (Doyle, 1986; Saltmarsh et al., 2015), which may be challenged by a move into a new type of environment. Individual teachers are still however expected to ‘be organised’, to the extent that discourses of structure are “imbricated in a profoundly ideological tradition oriented towards achieving an orderly and compliant population for the purposes of social governance” (Saltmarsh et al., 2015, p. 5). It is a familiar theme and finding supported by Alterator and Deed (2013), who

notes a tendency for teachers to want to ‘impose order’ upon new environments. To Saltmarsh et al. (2015), the tension was in gauging the optimum level of structures in terms of timetables, routines, sound and movement. In their study, spatially responsive practices occurred where the emphasis shifted towards students and teachers working together to co-construct optimum spatial usage. This finding follows that in the Jindal-Snape et al. (2013) review of creativity and teaching practice, suggesting; “learners should be given some control over their learning and supported to take risks” (pp. 23-24), a consistent theme in contemporary learning discourse.

In much the same way, researchers have observed characteristics of leadership in ILEs affording decreased hierarchy between teachers and leaders, often evidenced by ongoing and informal dialogue between team members, and efforts to nurture team culture (Alterator & Deed, 2013; Campbell et al., 2013; Crowther, Kaagan, Ferguson, & Hann, 2002). To Henkin et al. (2010), the result was more heterarchical styled structures within teaching teams, as when “space becomes shared rather than individualised power becomes more widely distributed throughout the organisation” (p. 53). In Campbell et al. (2013) for example, although more experienced teachers generally took on responsibility for the team, opportunities were also created for less experienced members to lead specific curriculum areas or activities. These stood outside formal leadership roles and instead took the form of “teacher “as pedagogical leaders” (p. 217). It emerged as a flexible leadership structure, which enabled teachers, whether they had been at the school for a long time, or were relatively new, to take on leadership roles. Although this enabled leveraging of others’ skills, there was acknowledgement that it did not result in all teachers developing skills across the curriculum.

2.6.2.5 Collaboration in ILEs: Materiality

For (Saltmarsh et al., 2015), “the structuring, ordering and placement of material objects and the orderly distribution of physical bodies presented an ongoing concern for educators” (p. 6). Here they refer to the emphasis placed on material practices to make effective use of the new space, particularly types and layouts of furniture. Designated areas for particular activities, colour coding of tables signifying group or individual use, and central placement of technological resources formed what (Saltmarsh et al., 2015) termed “visual and spatial cues” (p. 7) which enabled communication about activities and expectations without “excessive repetition” (p. 7). Similarly Alterator and Deed

(2013) note that the new settings were “authorising a far less rigid understanding and use of space” (p. 322), drawing attention to the fluid use of space and recognition of ‘boundary changes’.

Resource management across larger cohorts of students and teachers adds a layer of complexity that, without sufficient technology, supplies or staff, could potentially mean that “learning activities can be overly prescribed and potentially curtailed by timetables, and by who is using what, or planning to use it” (Saltmarsh et al., 2015, p. 7). Drawing on de Certeau (1984), Saltmarsh et al. (2015) suggested that a teaching team’s “practice of space relies on extant beliefs about the need for order, consistency and repetition, even in the context of spaces designed for flexibility, adaptability, exploratory and agile learning” (p. 8). Here too, attention is drawn to allocation of resources, with a sense that some teachers in the study made use of resources to “demarcate their authority” (p. 9). In so doing it appears a power imbalance was created within the shared space.

Individual teachers in a primary school context have long enjoyed a close association with a specific space. Charged with creating the ‘learning environment’ within ‘their classroom’ they have made modifications to the layout of materials, the placement of furniture, and the use of signage and display (Bissell, 2004; Clandinin & Connelly, 1996). In doing so, they engender a degree of ‘ownership’ over the classroom (Henkin et al., 2010), acting as “decision-makers and gatekeepers” (Henkin et al., 2010, p. 62). As (McGregor, 2003a) observed “the workplace in school was initially identified by teachers as ‘their’ classroom” (p. 360). Furthermore, within the room, the teacher’s desk and workspace at the front, close to the walled writing surface and cabling points, locate the teacher’s position, authority and ownership (Bissell, 2004; McGregor, 2003b).

Ascertained through concepts of visibility, proximity, flexibility, relationality, and materiality, it is evident that a shift into collaborative teacher settings requires levels of adaptation and adaptability (Alterator & Deed, 2013). Furthermore it is apparent that the requirement to collaborate reveals aspects of space and spatiality hitherto less emphasised in professional interactions and obligations. As a field it appears under-researched and undertheorised, hence ripe for further investigation.

2.7 Conclusion

Chapter 2 has presented a review of relevant historic and contemporary, professional, pedagogical and theoretical research literature on context, learning environments and teacher collaboration, in order to recognise, position, and relate the two concepts. It has investigated conceptualisations of collaboration and space at both broad and detailed levels before considering the specific interplay between them in the micro-context of teachers and ILEs. In doing so the review aims to provide the research with “foundation and inspiration” (Boote & Beile, 2005, p. 6), as well as reveal gaps in the literature, which, for the purpose of the current study, present a researcher’s ‘call to action’.

Perspicuous through the discourse on contemporary learning and society is the recognition that space, and particularly those occupied by children in school, matters (McGregor, 2004a). Described as complex adaptive socio-spatial assemblages (Dovey & Fisher, 2014) located within broader physical and digital networks of opportunity (Leander et al., 2010), and offering a range of affordances (Gibson, 1977), the reconceptualisation and practical articulation of educational space is considered vital in supporting the translation of current educational priorities into daily practice. Many of these priorities revolve around notions of so-called ‘21st century’ learning, informed in turn by the: conceptualisation of the ‘knowledge society’; complexity and uncertainty of global change, and emerging ‘wicked’ societal problems; the rate of change in technological capability, and effective dismantlement of physical and digital boundaries (Cherry, 2005; Gilbert, 2005; Kelly, 2016; Monahan, 2005; Rittel & Webber, 1973; Steffen et al., 2015). Such learners are depicted as necessarily ‘lifelong’, ‘digitally enabled’, and ‘meta-cognitive’: their teachers facilitatory, networked, and collaborative. In this context, briefed with enabling such present-day and future children to thrive in learning, life and work, educationalists, school leaders, and policymakers have long been describing systemic educational changes geared towards fulfilling this broad vision (Bolstad et al., 2012; Fadel et al., 2015; Fullan & Langworthy, 2014; OECD, 2018; Sinnema & Aitken, 2013; Trilling & Fadel, 2009; Zhao, 2011).

Although a relatively late arrival to the discussion spatial responses and precisely the construct of ILEs along with the collaborative practice they are understood to engender, put educational space and spatiality firmly in the frame of contemporary

learning. Despite these powerful drivers, the nature of ILEs in relationship with the collaborative work that is envisaged in them is under-researched and under-theorised.

Researchers have touched on the idea of teacher collaboration in ILEs, often explored through broader case studies into space and pedagogy. However its significance has received little detailed attention. Specifically, in the discourse regarding the transition of teachers into ILEs, the enactment of teacher collaboration from a spatial perspective appears something of an absent presence yet it provides a lynchpin underpinning their prospective success.

2.7.1 Research question

The goal of the research is therefore to understand the nature of experiences and enacted practices of teachers working collaboratively in primary school Innovative Learning Environments in New Zealand. The question and subsidiary question therefore needed to reflect a sequential logic ‘burrowing down’ from the ‘big picture’ – understanding the significance of the local context – to the specific, and what practice for teachers looked like at nine o’clock on a Monday morning. The key question guiding the research evolved as the literature review unfolded thus:

How is teacher collaboration in New Zealand primary school ILEs pedagogically and spatially, theorised, conceptualised, and enacted?

The following subsidiary questions guided the exploration:

- What is the perceived rationale – pedagogically and spatially – for ILEs?
- What are the perceived implications of teacher collaboration in ILEs?
- What practices have been developed and enacted by teams currently occupying ILEs, and to what extent are they collaborative?
- To what extent is space a factor influencing teacher collaboration in ILEs?

The following chapter aims to achieve transparency of the research process. It outlines ontological and epistemological assumptions, methodology and methods utilised in the study, together with data analysis techniques employed. In addition, participants and sites, along with how they were selected, are detailed.

Chapter 3

Research design: Methodology and methods

3.1 Introduction

One of the biggest conversation stoppers, and constraints on one's development as a researcher, is the presumption that there is a right method or set of techniques for doing educational research. (Elliott, 1990, p. 5)

The decision on how to conduct a research project is faced early by the emergent researcher. Navigating a course through the paradigm puzzle with alertness to its multiple confluences and contradictions, (Lincoln, Lynham, & Guba, 2011), renders, at times, a confusing trail. Consideration of the 'nature of reality' coupled with an appreciation of the 'nature of knowledge' are both required before understanding how to advance a discourse (Sarantakos, 2013). Design, therefore, relates to an issue, a need to be addressed, or a problem that needs to be solved (Crotty, 1998). Getting things the right way around is a critical step, else, as (Fetterman, 2010) warns, there is danger of falling foul of the proverbial methodological tail wagging the research dog.

Chapter 3 outlines and justifies the design of this study. It explains the research design, the methodology and data collection methods, along with illustrating how data were analysed, findings extrapolated, and theory developed. In part, the purpose is to provide a practical and transparent view of how the research was conducted. Also though, as Sarantakos (2013) suggested, given the intended outcome is to conclude by presenting findings and making claims, it is necessary to ensure congruence and alignment between the hierarchical order of ontology, epistemology, and methodology. Suitability of the design to address the research questions and limitations of the approach are addressed.

The goal of the research is to gain new knowledge and understandings about how teacher collaboration in Innovative Learning Environments (ILEs) in New Zealand primary schools is theorised, conceptualised, and enacted, the aim being to support successful spatial transition and ongoing work of teachers, teacher teams, and leaders.

3.2 Theoretical orientation: Ontology and epistemology

Fundamental beliefs defining research inquiry extrapolate from responses to questioning the ontology, epistemology and methodology of the inquirer. Firstly, the ontological question relates to the nature of reality under investigation, and what can be known about it. Secondly, the epistemological question concerns the relationship between the inquirer (the knower), and what can be known (i.e. knowledge). Finally, the methodological question informs how the inquirer can go about finding out whatever he/ she believes can be known. Collectively this forms the paradigm ‘package’, connecting parameters of the study in a hierarchical, philosophical and prescriptive logic (Sarantakos, 2013).

In this research, the ‘package’ employed takes an ontological foundation in constructionism, an interpretivist and critical epistemology, qualitative methodology, and methods drawn from ethnographic inquiry. Here it is acknowledged the differentiation between ontological and epistemological perspectives becomes murky when applied to constructionism, with ontology often subsumed epistemologically (Crotty, 1998; Guba & Lincoln, 1994), as discussed below.

3.2.1 Ontological orientation

Crotty (1998) determines constructionism to be “the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of the interaction between human beings and their world, and developed and transmitted within a social context” (p. 42). Critical within this are three implicit ideas: (a) that reality is ‘constructed’ between a person and the ‘thing’ they are experiencing; (b) that reality is ‘constructed’ between people, (hence co-construction and social constructionism); and (c) that reality can be reflexive of culturally, historically and societally defined constructs (Berger & Luckman, 1966; Bryman, 2012; Gasper, 1999; Sarantakos, 2013). Consequentially, both construction and reconstruction form central tenets of constructionism (Bryman, 2012).

3.2.2 Epistemological orientation

Interpretivism is the “key process that facilitates construction and reconstruction” (Sarantakos, 2013, p. 40). It emphasises meaning that people make in social situations, requiring the researcher to “make sense of (or interpret) the meanings

others have about the world (Creswell, 2014; Neuman, 2006). In this study, an interpretivist epistemological approach reflected an underlying congruence with understanding how collaborative relationships and realities, and the resulting ‘negotiated order’ (Strauss & Corbin, 1998), form.

A critical approach was adopted to complement the interpretivist approach. Whereas interpretivists are concerned with describing and explaining perspectives and practices, critical research also involves an evaluative stance (Hammersley, 2014). Hammersley (2014) suggested that while interpretivist and constructivist approaches can aim to understand cultures “in their own terms” (p. 183), critical research can only “be understood within a framework of a comprehensive theory that locates them in the wider social system” (p. 183).

3.2.3 A congruent approach

In approaching the research from these theoretical foundations, there was a high level of congruence with the concepts of collaboration – as a socially constructed and contextualized practice that emerges over time (Woodland & Hutton, 2012), a relational practice underpinned by a series of ongoing negotiated interactions (Dillenbourg, 1999), and with concepts of space and spatiality. As McGregor (2003a) posited, “space makes a difference” (p. 353), echoing the rise of the ‘spatial turn’ in social sciences, the emergence of considerations towards the ‘socio-spatial’, and an increasingly critical approach to studying the spatiality of schools and schooling (Dovey & Fisher, 2014; Fisher, 2004; Mulcahy, 2006; Nespor, 2002). Researchers aiming to understand school space, less as a set of values attributed to environmental features, and more as means of comprehending the reality of those who use them most – teachers and students have adopted a similar approach (see for example Charteris et al., 2017; Cleveland, 2009; Dovey & Fisher, 2014; Fisher, 2004; Gislason, 2007; McGregor, 2003a; Mulcahy, 2014; Nespor, 2002; Peterson, 2015; Sherringham & Stewart, 2011; Woodman, 2011).

3.3 Research design

For this research, a focus on conceptualising the interrelationship between teacher collaboration and space necessitated a qualitative approach. It acknowledged the range of interpretations of collaboration, the nature of teachers’ and students’ interactions with each other and with space, and the suggestion that these relationships

may shift across time. In addition, it built on epistemological principles demonstrating the interrelationship between people and space as constructed by – and between people in situ. The research was mindful of two principal approaches: case study approach and ethnography; both considered to have merits and limitations. They are discussed below.

3.3.1 Case study

Case studies are considered one of the principal forms of inquiry in the social sciences (Bryman, 2012; Creswell, 2013; Neuman, 2003; Stake, 1995; Yin, 2014) – and particularly pertinent to educational research (Merriam, 1988; Punch, 2009). Stake (1995) defines case studies as “the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (p. xi). Here, the concept of ‘boundedness’ is an important one, referring specifically to the demarcation of where the case begins and ends (Stake, 1995). A case may focus on an individual, a group, organisation, or a country (Stake, 1995); moreover, on a decision, policy, incident or process (Punch, 2009; Thomas, 2011b). Overall a case study aims to develop as full an understanding of the case as possible, using whatever methods and data are appropriate (Punch, 2009). Punch (2009) suggests adopting “a holistic focus, aiming to preserve and understand the wholeness and unity of the case” (p. 119). Importantly though, a commitment is required towards studying the complexity of a particular situation – looking at a subject from multiple angles, in order to build a full a picture as possible (Stake, 1995).

In this research, an instrumental approach was methodologically suitable for investigating an issue through a particular case, whereby the issue becomes the focus rather than the group under investigation (Stake, 1995). Here, the concept of ‘teacher collaboration in ILEs’, constituted the object of inquiry, which came under scrutiny, rather than the teachers themselves. The research subjects were selected because they formed an “interesting...or revealing example through which the lineaments of the object can be refracted” (Thomas, 2011b, p. 514). The case could also be considered ‘key’ (Thomas, 2011b); notable because the schools selected within the study are early adopters (Rogers, 2003) of collaborative teaching within ILE settings.

3.3.2 Collective case study

The objective of the study was to build knowledge and subsequently, theory through an iterative theory-building approach (Stake, 1995). The study was designed as a ‘collective case’ (Stake, 1995); here the instrumental case study approach is enlarged to cover several sites, contributing a broader range of experiences and situations on which to draw. Yin (2014) refers to this as an embedded case study, whereby units of analysis, in this case, teacher-teams, are embedded within the case (teacher collaboration in ILEs) and within the context (New Zealand primary schools). As Bryman (2012) states, the collective case study may be employed as a way of comparing and contrasting cases, and arguably improves theory building. Here, however, the intention was to use each unit of the case to inform and add to the whole.

3.3.3 Appropriateness of case study design

Within research on collaboration and innovative teams, case studies are often employed as the methodological approach (Crow & Pounder, 2000; Levine & Marcus, 2010; Martin & Williams, 2012; Meirink et al., 2010; York-Barr et al., 2007). Similarly in recent research into school learning environments, case study approaches have become increasingly evident (see for example Alterator & Deed, 2013; Benade, 2017c; Blackmore, Bateman, Cloonan, Dixon, Loughlin, O'Mara, & Senior, 2010; Campbell et al., 2013; Cleveland, 2018; Gislason, 2009b; Martin & Williams, 2012; Mulcahy, 2014; Peterson, 2015; Saltmarsh et al., 2015; Woodman, 2011; Woolner, McCarter, Wall, & Higgins, 2012). The assertion from Stake (2000) is that “a case study is both the process of inquiry about the case and the product of that inquiry” (p. 444), also reflects the idea of collaboration as both a journey and destination (Gajda, 2004). So too, in the concept of space and place as, ‘becoming’ (Dovey, 2010).

3.3.4 Ethnographic influence

A case study is a selection of what is to be studied rather than a methodological design in its own right. It does not prescribe strategies or techniques (Flyvberg, 2011; Stake, 1995); instead, it is for the researcher to decide which will be most appropriate. For this collective case study a range of ethnographic techniques (Bryman, 2012; Cohen, Manion, & Morrison, 2011; Hammersley & Atkinson, 2007) were selected;

concerned with conducting interviews, collecting documentation, field notes, and utilising visual ethnographic strategies (Bryman, 2012).

Fetterman (2010) states that ethnography is concerned with “giving voice to people in their local context” (p. 1), thereby “telling a credible, rigorous, and authentic story” (p. 1). Historically linked to the field of cultural anthropology, ethnography accentuates prolonged immersion in the study context (Bryman, 2012; Fetterman, 2010; Hammersley & Atkinson, 2007; Harris, 1968), aligned with the concept of *participant observation*. Participant observation entails involvement in the lives of those being studied, at the same time as maintaining a professional distance that allows detailed recording and observation to occur (Fetterman, 2010).

The research was mindful of critique levelled by Hammersley (2006) and Hammersley and Atkinson (2007), demonstrating the term ‘ethnography’ has been apprehended by other approaches to research, creating “fuzzy semantic boundaries” (p. 1) in social sciences. Work by Parker-Jenkins (2018) though, has since suggested, “researchers are not actually conducting ethnography as understood within a traditional sense but rather are engaging in case study, drawing on ethnographic techniques (p. 18). Problematised, through her work in education Parker-Jenkins (2018) proposes: “‘Ethno-case study’ might better convey the sense of an inquiry concerning people which employs techniques associated with long-term and intensive ethnography but which is limited in terms of scope, time in the field and engagement with data” (p. 18).

Ethno-case study is a relevant conceptualisation for the objectives of this study; it sets research boundaries, acknowledges location in a wider context, and suggests limitations on research time while benefiting from key ethnographic learning (Parker-Jenkins, 2018). Like the work of Parker-Jenkins (2018), it occupies the interstitial between case study and ethnography and makes the most of the relative positioning in its outlook and intention. As Cohen and Court (2003) notes:

Ethnography is inward looking, aiming to uncover the tacit knowledge of culture participants. Case study is outward looking, aiming to delineate the nature of phenomena through detailed investigation of individual cases and their contexts. (p. 283)

3.4 Three phase study: ‘Progressive focusing’

The study was conducted over three phases, enabling the research to funnel from the broad to the specific and strengthening the veracity of findings as a consequence. Phase 1 used expert elicitation to help identify key foci and key sites, Phase 2 consisted of a suite of mixed site investigations to ascertain key concepts and adopted practices, and Phase 3 consisted of a series of longer-term in-depth studies to hone in on specific aspects of practice. The strategic and structured process enabled progressive focusing (Parlett & Hamilton, 1976) to take place: an iterative data gathering approach (Miles, Huberman, & Saldana, 2014) that would ultimately lead towards new understandings. Each phase addressed specific subsidiary questions, outlined below.

3.4.1 Phase 1: Learning from ‘experts’

The opportunity to gain ‘expert’ local data was seen as critical to understanding definitions, identifying characteristics of pedagogical practices seen as successful, and ascertaining opportunities engendered for collaborative teaching practice. Phase 1 of the research, therefore, utilised a group of key ‘experts’, initially recruited through professional networks, and then through a ‘snowball’ technique (Bryman, 2012). Experts were chosen because of their role in school leadership or in professional learning. The aim of this phase was to understand (a) the background and factors underpinning ILEs in the New Zealand context, (b) characteristics of pedagogical practices in collaborative ILEs, and (c) recommendations of ILE schools that were considered exemplar sites. The latter applied the technique of *reputational site selection* (Goetz & LeCompte, 1984; LeCompte & Schensul, 2010) to determine locally relevant sites for study. Exemplar sites have often been utilised in learning environment research (Blackmore et al., 2010; OECD, 2011). In particular, the phase aimed to determine:

- What is the perceived rationale – pedagogically and spatially – for ILEs?
(Subsidiary question 1)
- What are the perceived implications of teacher collaboration in ILEs?
(Subsidiary question 2)

3.4.2 Phase 2: ‘Snapshot’ study

The second phase of the study involved two to three day, ‘snapshot’ studies at six sites (elicited through reputational site selection); employing interviews with principals, groups of teachers and students, observations, and images. The intention was to ascertain key concepts and adopted practices. Images and floor plans of ILEs were also collected to assist understanding of the relationship between collaborative practice and types of learning spaces such as those illustrated by Dovey and Fisher (2014). In particular, this phase aimed to determine:

- What pedagogical and spatial practices have been developed and enacted by teacher-teams occupying ILEs, and to what extent are they collaborative? (Subsidiary question 3)

Based on the analysis of data, the case sites considered “most promising and useful” (Creswell, 2013, p. 100) were chosen for continued study.

3.4.3 Phase 3: In-depth study

The final phase of the research involved in-depth investigation at three of the Phase 2 sites; with three-four weeks spent with each of the three identified teaching-teams, across a four-month period. Field journal observations, interviews and documentation were used as data sources. Repeated visits enabled an iterative approach (Creswell, 2013; Stake, 1995), and supported a reflective cycle, ensuring sufficient data was collected to offer a strong evidence base for subsequent findings (Flewitt, 2014). Specifically, this phase aimed to determine:

- To what extent is the physical environment a factor influencing teacher collaboration in ILEs? (Subsidiary question 4)

3.5 Data collection and analysis methods

The most important element of fieldwork is being there – to observe, to ask seemingly stupid but insightful questions, and to write down what is seen and heard (Fetterman, 2010, p. 9)

Arguably traditional data collection techniques are no longer sufficient to provide the depth of information needed to understand the practices of teaching and

learning in an ILE (Blackmore, Aranda, Bateman, Cloonan, Dixon, Loughlin, O'Mara, & Senior, 2011a). Reflecting the complexity of the research and aim of developing “as full an understanding of the case as possible” (Punch, 2009, p. 119), a mixed qualitative methods approach to data collection was considered most appropriate. Methods were informed by the type of data required to answer the research questions, as well as methods used by earlier researchers in the fields of collaboration and learning environments. The aim was to maintain congruence across ontological, epistemological and methodological approaches.

The rationale for using multiple sources also lay in the capacity for triangulation (Yin, 2014). The image of researcher as ‘bricoleur’ Denzin and Lincoln (2011) is a useful one; suggesting the researcher learns how to borrow from other disciplines, and as such undertakes a process of combining elements according to the specifics and complexity of the situation. It appeared apposite. Research methods for each of the Phases of the study are detailed in Table 3.1 and discussed below.

Table 3.1. Research methods utilised across the three phases of the study

Phase of study	Individual Interviews (semi-structured/unstructured)	Group interviews (semi-structured)	Participant observation	Photographs	Documents
Phase 1	Yes	No	No	No	No
Phase 2	Yes	Yes	Yes	Yes	Yes
Phase 3	Yes	Yes	Yes	Yes	Yes

3.5.1 Participant observation

Participant observation (Bryman, 2012; Cohen et al., 2011; Fetterman, 2010; Spradley, 1980; Stake, 1995) was used to collect data on practices in the ILEs. Where possible, this included team meetings, professional learning, and informal conversations with teachers and leaders. Formal observations (Phase 2 and 3) were guided by a set of issues developed through the literature review and analysis of Phase 1 data, including for example, identification of support structures, pedagogical approaches, and methods of co-teaching employed. Informal observations (Phase 3) were guided by issues identified through interviews and conversations with participants. Observations were

recorded as field notes, either at the time or as soon after as was reasonably possible, ensuring observations and dialogue were captured accurately. Bryman (2012) acknowledges that participant observation strategies sit on a continuum from passive spectator to active participant. For this study the researcher aimed for a ‘minimally participating’ role, although at times it was seen that this was less achievable (e.g. when asked to accompany students and teachers on a school trip, making cups of coffee in the team’s kitchen).

At this juncture, a further comment is required regarding the positioning of the researcher in the research. Specifically this reflects the fluidity of the researcher within school settings, where professional experience, the researcher’s role, and access to colleagues’ workplaces, means one is simultaneously both insider and outsider (Thomson & Gunter, 2011); an insider because the broad context is familiar, and participants communicated and engaged in the process with that understanding; an outsider because every school is inherently different, so it was important to maintain an impartial perspective. As Thomson and Gunter (2011) state this forms an uncomfortable binary, and one which on the ground is less clear-cut, with researcher identity shifting from one position to another. As a researcher it was important not to be ‘like a teacher’ in the sense that I was professionally accustomed to be, yet in interactions with children this was important, and something that was reinforced through the ethics process. Here I made clear I was a teacher as well as a researcher. My experience of spending time in schools was a positive one. Teachers, on the face of it, were interested in the project, and I was well received. This was particularly critical in Phase 3 where so much time was spent in colleagues ILEs.

3.5.2 Interviews

Interviews, particularly powerful data-gathering methods in ethnographic research (Fetterman, 2010), formed a significant component of data collection. Interviews were used throughout the study to address multiple issues and lines of inquiry regarding teacher collaboration and ILEs. The style of interview varied strategically from semi-structured (Bryman, 2012; Fontana & Frey, 2005; Kvale, 1996), to unstructured (Fontana & Frey, 2005). A semi-structured approach was more epistemologically congruent in its capacity to achieve what Punch (2009) refers to as, “many of the characteristics of a prolonged and intimate conversation” (p. 148). It also

offered sufficient flexibility to follow the natural direction of the conversation, and for interviewees to express their ideas and perspectives (O'Leary, 2010). Over time, as trust grew, the more unstructured approach gave rise to new insights.

Providing opportunities for more extended narrative was important (Riessman, 2008). Riessman (2008) suggests the goal of interviewing is to “generate detailed accounts rather than brief answers or general statements” (p. 23); in so doing reflecting this conversational protocol is more in line with ethnographic than traditional social science interview techniques and viewed more as collaboration, and co-constructive of meaning. Riessman notes “if we want to learn about an experience in all its complexity, details count” (p. 23). Interviews took between 30 and 60 minutes. They were digitally audio-recorded using an MP3 recorder and transcribed before analysis.

Transcription was conducted personally, with notes and initial codes created during the process. Paper copies of interview transcripts were used initially for reading, re-reading and annotations. Subsequently, electronic copies were used within the NVivo software package – creating and coding to nodes, and adding memos where relevant. NVivo computer software was useful as an assistive technology in the organisation of codes and subsequent analysis of data; performing a valuable role in storing, sorting and coding as well as assisting with the retrieval of data (O'Toole & Beckett, 2013; Sarantakos, 2013). Simultaneous use of online NVivo tutorials was useful in providing ‘just in time’ learning. It was beneficial in understanding the use of nodes, matrices, classifications, memos and annotations. The use of visualisation tools within NVivo, such as ‘Hierarchy Charts’, helped to hone in on emerging themes and sub-themes.

3.5.3 Group interviews

Group interviews (Bryman, 2012; Fontana & Frey, 1994, 2005; Frey & Fontana, 1991; Kitzinger, 1995; Morgan, 1988; O'Toole & Beckett, 2013) were used in Phase 2 of the study. They were utilised to identify issues pertinent to how teacher-teams worked together, and with students to understand experiences of ILEs in a way that was more pedagogically familiar than an individual interview. For this study, the interview strategy illustrated an underlying epistemological and socio-spatial congruence. The opportunity to interview teachers working together within collaborative learning environments on a collective basis provided a potential opportunity to ‘bounce ideas’ (O'Toole & Beckett, 2013) and explore some issues that may not have surfaced during

individual interviews (Morgan, 1988). The research was mindful of identified drawbacks of group interviews (Fontana & Frey, 1994; O'Toole & Beckett, 2013), specifically in relation to power, dominance, recalcitrance, silence and 'group think', along with potential 'micro-politics' (Ball, 1987; Hargreaves, 2001).

As with individual interviews, they were digitally audio-recorded. Additional field notes made during the conversations alleviated the difficulty of discerning between participants during transcription Bryman (2012).

3.5.4 Photographs

Photographs were taken and utilised for three purposes: (a) for personal recollection and record keeping – an aide-mémoire for the researcher; (b) as 'reflexive' prompts for discussion by participants; and (c) to document particular aspects of the physical and built environment (Bryman, 2012; Harper, 2002; Loughlin, 2013; Mitchell, 2011; Neuman, 2003; Pink, 2001).

Photographs were taken both by the researcher and by children (in Phase 3), as part of a photo-elicitation method to engage younger participants in the study. Blackmore et al. (2011a) draw on Rudduck and Flutter (2004) suggesting different techniques are possibly required to gain a more accurate picture of students' lived experience of space and explore several visual methodologies to utilise when investigating student's experiences of spaces. The use of photographic methods was considered valuable in helping to elicit student voice. As Freeman and Mathison (2009) outline, photographs can be "especially valuable when combined with additional interpretation provided by participants" (Freeman & Mathison, 2009, p. 114). Practicalities and access to equipment were considered and negotiated before this task (Rose, 2012).

The use of images, ethics, and the subsequent potential for identification of schools and participants is explored as part of the ethics section of this chapter.

3.5.5 Documentation

Documents, as (Bowen, 2009) observes, contain "text (words) and images that have been recorded without a researcher's intervention" (, p 27). Examples of documents collected and analysed included teacher planning, timetables and

organisational artifacts, and school visions. They were also considered a key source of triangulation (Bowen, 2009). Some were available as physical documents, others as screenshot of digital artefacts. Architectural plans illustrating the physical environment, where available, were also collected.

3.6 Analysis of data

In qualitative research, data analysis does not sit alone (Bryman, 2012; Fetterman, 2010; Marshall & Rossman, 2011; Merriam, 1998). Instead, it follows an iterative approach, accompanying the data collection, in a “repetitive interplay between collection and analysis” (Bryman, 2012, p. 566). Initial data is analysed and then used to shape the subsequent stages of data collection. Creswell (2013) portrays this as a “zigzag” (p. 86) approach, meaning the researcher cycles from fieldwork to analysis to fieldwork, to ascertain, elaborate on, and refine categories of information. Similarly, O’Leary (2010) describes the aim of data analysis being “to move from raw data to meaningful understanding” (p. 260), a process of uncovering themes and extrapolating meaning relating to the research question. In doing so, the researcher is looking for patterns and finding commonalities (O’Toole & Were, 2008) leading ultimately, “not just for insights and overviews, but insights” (p. 151).

Data collected from individual and group interview transcripts, observational notes, and field diary entries were analysed using an approach guided by the principles of thematic narrative analysis, as developed by Riessman (2008). Riessman (2008) suggests that thematic narrative analysis is similar to interpretive phenomenological analysis and grounded theory. However, the approach differs in that it allows for prior knowledge and concepts to assist the inquiry, whilst supporting the search for “novel theoretical insights” (p. 74). With the focus on the content of “what is said, written, or visually shown”, (p. 74), Riessman (2008) notes thematic narrative analysis may be used by researchers to theorise from stories gathered in interview and group meetings. Additionally, narrative analysis aims to not disaggregate ‘sound bites’ from the whole (Griffin & May, 2012).

Following Riessman (2008), codes were informed by (a) prior theory, for example, the elements of co-teaching Villa et al. (2008), collaborative process elements (Thomson & Perry, 2006), and language of space (Lawson, 2001); (b) the research

questions and underpinning objective of the inquiry; and (c) additional themes emerging from the data, for example, relating to deprivitisation, hierarchy, shared language, spatial ownership, and collaborative norms. As Miles et al. (2014) note, these codes formed “prompts or triggers for deeper reflection on the data’s meanings” (p. 73) – used to find patterns, determine categories, and to build theory (Saldana, 2013). Approximately 250 different codes emerged during the study – an ongoing process of establishment, amalgamation and separation, to reach coherence and consistency. Codes were subsequently taken in turn and analysed by looking at the elements of the story that underlay them. Codes were grouped into themes and used to record the findings at each site.

3.7 Identification of population, sites and samples

The three phases of the research served different purposes. Therefore the identification of relevant people and sites required a varied sampling strategy. The strategies adopted are outlined in Table 3.2 and discussed below.

Table 3.2. Sampling strategy utilised across phases of study

Phase of study	Participants	Sampling strategy	Number of participants/ sites
Phase 1	Principals, educational consultants, Ministry of Education personnel	Snowball sample (initially 6 participants)	17 participants
Phase 2	Primary schools with ILEs	Reputational site selection (conducted during Phase 1)	6 schools (x participants)
Phase 3	Primary schools with ILEs	Selected from Phase 2 sites (based on data collected)	3 schools (x participants)

3.7.1 Phase 1: Expert participants

Phase 1 involved interviewing a range of educational ‘experts’ (O’Leary, 2010) with ILE experience and expertise, from across New Zealand; particularly participants who worked directly as leaders of new schools (‘new’ identified as being less than five years old), or leaders of schools undergoing, (or recently undergone), significant spatial change. Additionally, several educational consultants, acknowledged for their expertise,

along with one Ministry of Education staff member, involved in property development of ‘new schools’, were interviewed. Initial recruitment was through the researcher’s professional network; subsequently, a ‘snowball’ technique (Bryman, 2012) was adopted. The intention was to continue this ‘snowball’ routine until (a) theoretical saturation (Bryman, 2012; Strauss & Corbin, 1998) was achieved; and (b) sufficient relevant sites had been repeatedly identified as relevant for Phase 2. A total of seventeen interviews were conducted during Phase 1 (all of those approached agreed to take part). Due to the geographic distances involved, and the need to meet at convenient times, it took several months to complete the Phase 1 interviews. However, these provided a thorough grounding in the context and assisted in identifying issues, which would become central to the study. Descriptions of Phase 1 participants (pseudonyms), their context, and roles appear in Table 3.3.

Table 3.3. Phase 1 participants, showing professional role and context.

Name	Role	Context
Jason	Foundation Principal	New primary school established 2010
Donna	Foundation Principal	New primary school established 2010
Julie	Foundation Principal*	New primary school established 2012
Dave	Foundation Principal*	New primary school established 2013
Michael	Foundation Principal	New primary school established 2014
Brett	Foundation Principal	New primary school established 2015
Peter	Principal*	Existing primary school, developing ILE
Tim	Principal	Existing primary school, developing ILE
Sharon	Principal	Existing primary school, developing ILE
Matt	Principal	Existing primary school, developing ILE
Barry	Principal*	Rebuilt primary school
Dean	Principal	Existing primary school, developing ILE
Nicholas	Principal	Existing primary school, developing ILE
Max	Educational consultant*	Professional learning in New Zealand schools

Catherine	Educational consultant	Professional learning in New Zealand schools/ businesses
Douglas	Educational consultant*	Professional learning in New Zealand schools
Kerry	Project Manager	Ministry of Education (Property)

Note. Pseudonyms applied. Initial interviewees indicated by *

Participants' engagement with ILEs was varied. Six had been appointed as 'foundation principals' by establishment Board of Trustees, and charged with the start-up of new 'green-field' schools; all developed with an intention for teacher collaboration in ILEs. Seven of the participants were principals in existing schools, involved in rebuilding or refurbishment of learning spaces; their introduction to ILEs precipitated by pedagogical initiative, necessity, or problem identification. Two of the principals were involved in rebuilding post the 2010-2011 Canterbury earthquakes. The educational consultants interviewed had all previously been engaged as teachers and leaders in schools, and were now involved in providing professional learning on leadership, pedagogy, and learning environments.

3.7.2 Phase 2: Site & participant selection

The study did not aim for statistical generalisation, so adoption of purposive sampling for Phase 2 was appropriate (Bryman, 2012). Sites were identified through a strategy of reputational site selection (Goetz & LeCompte, 1984; LeCompte & Schensul, 2010), drawing on Phase 1 participant knowledge (Miles et al., 2014). Reputational site selection has been used previously in educational research, for example, in identifying schools displaying innovative practices, experiencing significant reform (Blackmore et al., 2010), and exemplifying high-quality educational facilities (OECD, 2011) and; teachers engaged in continued innovation (Meister & Ahrens, 2011), and utilising constructivist literacy practice (Kingsley, 2009). Offered as an alternative to extreme or unique case study site selection Goetz and LeCompte (1984), Reputational site selection was a useful strategy due to the limited numbers of potential sites, and their geographic distribution across New Zealand. Participants were asked; "Could you give me some examples of where I might see high-quality teacher collaboration in action in a New Zealand primary school ILE, either new or refurbished?"

In total, 29 schools were recommended, and of these, six selected for Phase 2. Selections were made on the frequency of recommendation, and confirmation of alignment with criteria (primary school with ILEs). For the purpose of this study, the set of schools was not modified to include the full range of possible socio-economic contexts. Case site schools generated through the sampling strategy in this research resulted in a set of sites in middle to high socio-economic areas. Here, it is acknowledged that the literature includes some discussion of socio-economic contexts and the successful adoption of ILEs, although in both high and lower socio-economic contexts, successful implementation appears primarily contingent on school culture and educational approach rather than explicit design (Cardellino & Woolner, 2019; Gislason, 2009). In addition, it is also important to acknowledge here that although the site the researcher worked in as an Associate Principal was named during this process, it was not selected for inclusion due to ethical constraints. Table 3.4 below lists the sites selected. Further details follow shortly.

Table 3.4. Sites selected for Phase 2

School	Year level of students	Context
Hillside Primary	Year 3-6	New school (opened 2012)
Tidewater Primary	Year 5-6	New school (opened 2013)
Quarryview Primary	Year 3-4	New innovative learning environments opened in rebuilt school
Railway Terrace Primary	Year 3-4	Existing school, currently prototyping learning spaces, to be rebuilt in 2017
Cityside Intermediate	Year 7-8	Existing school, internal changes to create learning communities
Lakeside Primary	Year 5-8	New school (opened 2012)

Choice of teacher participants was driven theoretically; determined by the conceptual question, rather than by a goal of overall representativeness (Miles et al., 2014). Miles et al. (2014) suggest it is important to see different instances of a construct, “at different moments, in different places, with different people” (p. 33); the goal being to determine conditions under which the construct operates, rather than to

aim for generalisable findings. Consequently, a non-random sampling technique was implemented involving volunteer selection of teacher teams (O'Leary, 2010). The school principal and leadership team supported this selection with knowledge of their contexts, ensuring a degree of 'approval of an insider', and higher chance the selection was an exemplifying one (Kingsley, 2009). Potential teacher participants were provided with an outline of the research, in the form of plain language statements. What was critical was for the whole team to want to be involved in the research. Child participants at each site were selected using a broadly stratified sampling technique (O'Leary, 2010) (ensuring a gender mix), in consultation with the teacher-team.

The sites selected for the study are detailed below and include context, the teacher-team, and overview of the ILE. For simplicity, throughout the writing, references to teacher-teams and sites are per their school names, e.g. *Tidewater*. Across the set of schools, the general protocol was to refer to ILE communities by specific name, e.g. *Manuka*. This naming generally overlapped with the name of the building, or part of a building they occupied. However, in some situations, broader teams were designated with one name, and other names used to describe smaller communities within them. Also, students were sometimes assigned to a specific teacher group, with another frame of reference. Hence in some contexts, the designations to understand and recall were at school, large community, small community, and teacher group level. Where designations impacted on aspects under investigation, they are highlighted; otherwise, reference is made simply to the school's name.

3.7.3 Case site 1: Hillside Primary

Context: New school (opened 2012)

Hillside is a newly opened, Year 1-6 school (current roll 150), occupying a compact site in a high socio-economic suburban subdivision. It was repeatedly noted in Phase 1 as having a strong philosophy and highly intelligent, considered, and reflective approach to curriculum, learning design and practice. Pedagogically, *Hillside* sets out a vision for a holistic and personalised approach to learning, within a ‘humanising’ community: where student agency is seen to result from personalisation of learning for the learner, by the learner, and with the learner. This is enacted through varied structures of student grouping where students belong to ‘whanau’, mathematics and literacy groups, and provision of opt-in style workshops based on needs. Additionally a proprietary Learning Management System enables student access to learning progressions, evidence of achievement, resource and assessment data. *Hillside* has a strong belief that co-teaching approaches are important for teachers to understand and, “essential to being able to meet the needs of 21st century learners” (Leanne, Principal). Similarly, there is a belief that the leadership team should teach on a regular basis, as a means of modelling excellence and increasing teachers’ criticality about their own practice.

The Hub (Figure 3.3) is home base for Year 3-6 students. It consists of two ‘suites’ (One and Two), connected by a short ‘corridor’ (Figure 3.4). Each suite consists of a double classroom space (Figure 3.3), with adjoining open breakout space partially floored in vinyl, with a workbench and sink (Figure 3.1). The Hub has a teacher workroom (Figure 3.2), available for students’ use. Students also had opportunity to use other spaces around the school e.g. library, staff room and reception area. The Hub was minimally furnished with soft furnishings, beanbags and a few tables and stools. Classroom spaces were closeable with large sliding glass doors. One wall of each space was dedicated to storage, with large whiteboard doors, onto which a projector could display. External doors opened to the outside.

At the time, *Hillside* was showcased on the (now unavailable) OECD database of ‘Best Practice in Education Facilities’, acknowledging flexible spaces designed to accommodate a team teaching approach, meet a range of learning styles, and remain responsive to the changing demands of future focused learning.

Research focus ILE: Hillside Hub

3 teachers, 50 students (Year 3-6)

Approximate area: 230 m²



Figure 3.1. View of breakout space



Figure 3.2. View of teacher workspace

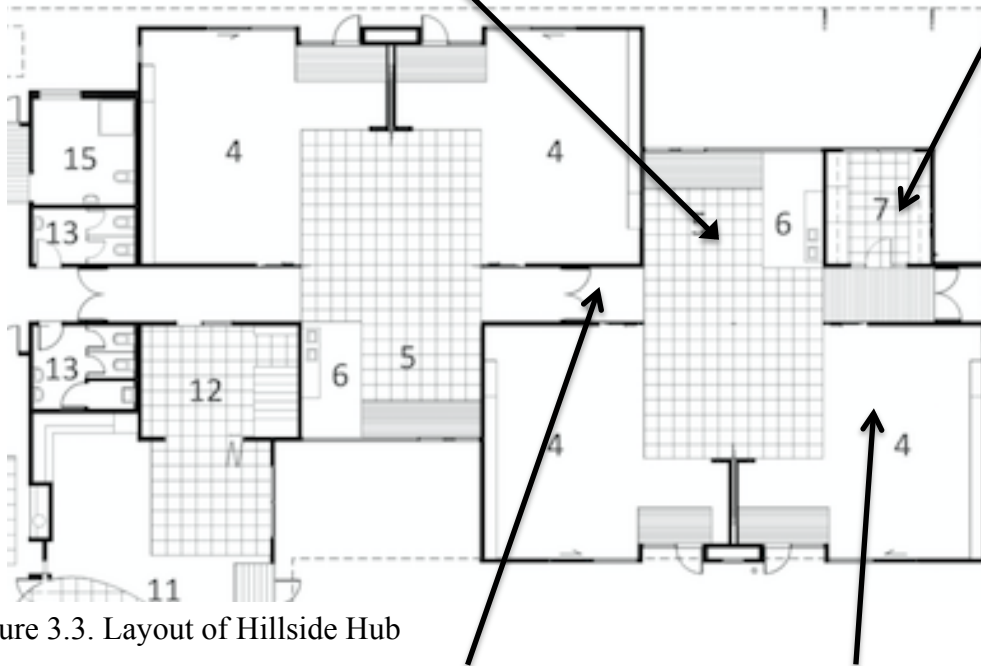


Figure 3.3. Layout of Hillside Hub



Figure 3.4. View of connecting corridor



Figure 3.5. View of learning space

3.7.4 Case site 2: Cityside Intermediate

Context: Refurbished school

Cityside is a well-established Year 7-8 school (current roll 290), on a large site in an upper-middle socio-economic residential area. It was recommended in Phase 1 as having made a significant impact on the local educational environment, with a clear vision for learning, and having made the most of opportunities presented by internal redesign and retrofit of existing spaces to enact a transparent model of teaching across the school. Pivotal to the school's vision was the idea of building agency and self-management skills in students, something regularly reinforced through the school-wide set of values. Students were encouraged to take responsibility for their actions, learning and relationships, as well as to feel proud of who they were and what they had achieved. The growing model of collaborative teaching practice provided opportunities for the school to build leadership, grow practice and accountability, and to provide opportunities for students. Additionally the shift from traditional sole teacher to collaborative groups of teachers operating together was viewed by Phase 1 participants as an effective model, which as one commented was "really leading the way" (Jason).

Cityside Learning Hub (Figure 3.7) is home base for 94 Year 7 and 8 students, and three teachers. The space is made up of four refurbished classroom-sized spaces, split by a central corridor (Figure 3.8). Adaptations had been made during refurbishment, particularly the removal of some upper portions of internal walls, replaced with glazing. Each room has been assigned specific usage: Room 1 was designated as a quiet space furnished minimally with several tables and chairs. This slightly larger room also functioned as the larger team meeting space where students sat on the floor. Room 2, designated for students to work in pairs, was furnished with taller tables and stools (Figure 3.6). Room 22 (the classroom), was set up as a teaching space furnished with a whiteboard on one wall and a set of tables in front of it, plus a teaching station with soft seating around it. In addition a row of individual desks ran down the outside wall on both side, facing the front. Room 4, the group room was furnished with group sized tables and chairs (Figure 3.5). The teacher workspace (The Think tank) consisted of a tall central table with shelving on the sides (Figure 3.9). Internal glazing afforded visibility into Rooms 1 and 2.

Research focus ILE: Cityside Hub

3 teachers, 94 students (Year 7-8)

Approximate area: 330 m²



Figure 3.5. View of Room 4 (Group space)



Figure 3.6. View of Room 2 (Paired space)

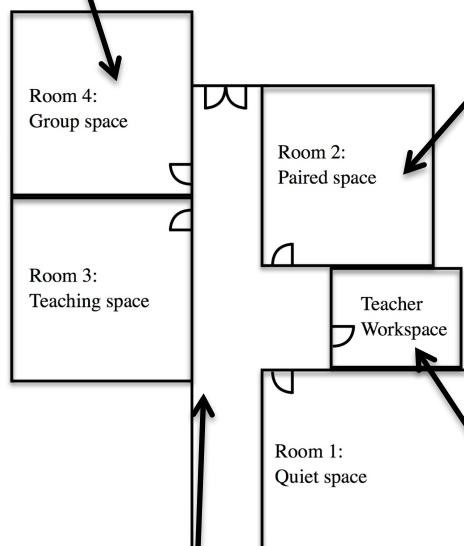


Figure 3.7. Layout of Cityside Learning Hub



Figure 3.8. View of central corridor



Figure 3.9. Central area & teacher workspace

3.7.5 Case site 3: Quarryview Primary Context: Rebuilt school

Quarryview School is a 150-year-old Year 0-8 school in a high socio-economic semi-rural area on the edge of Christchurch. It was the first to be completely rebuilt following the Canterbury earthquakes, having received significant damage. While the school was being reconstructed on what were previously the playing fields, the school operated out of tightly packed relocatable classrooms on a small section of the site. The school has been subject to keen interest as it transitioned an existing staff from traditional classrooms into ILEs, where adaptation to collaborative practice was an integral component of change. Recommendations were made on this basis. Key to learning at *Quarryview* was the idea of creating an environment where students were prepared for “lifelong success by inspiring every child to imagine, create and believe” (Greg, DP). Within this there was the idea of students becoming ‘self-directed’ where “agency, active partnership and strong sense of self” (Claire, DP) were promoted as core principles. Furthermore, incumbent in the school’s approach was not only a pedagogical philosophy but also one connected with ideas of community, and psychological safety.

The Learning Centre consists of two ‘studios’ with a glass doorway separating the two. The two studios each comprise an open space (Figure 3.13), with access to an adjoining vinyl-floored art ‘wet space’, closable with sliding doors (Figure 3.14). At the end of the studio are two smaller and connected breakout spaces (Figure 3.10). Between the two studios are a large breakout room (The Blue Room), a teacher workspace (Figure 3.11), and a small office (currently used by a teacher aide working with small groups of students). Currently three teachers (Emily, Fiona and Gemma) work in one studio, and two (Gillian and Suzanne) in the other.

Research focus ILE: Quarryview Learning Centre

5 teachers, 150 students (Year 3-4)

Approximate area: 425 m²

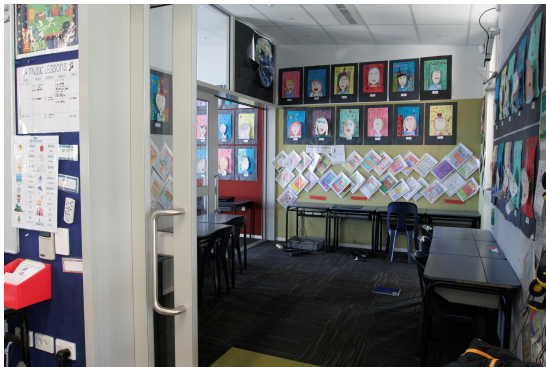


Figure 3.10. View of breakout space



Figure 3.11. View of teacher workspace

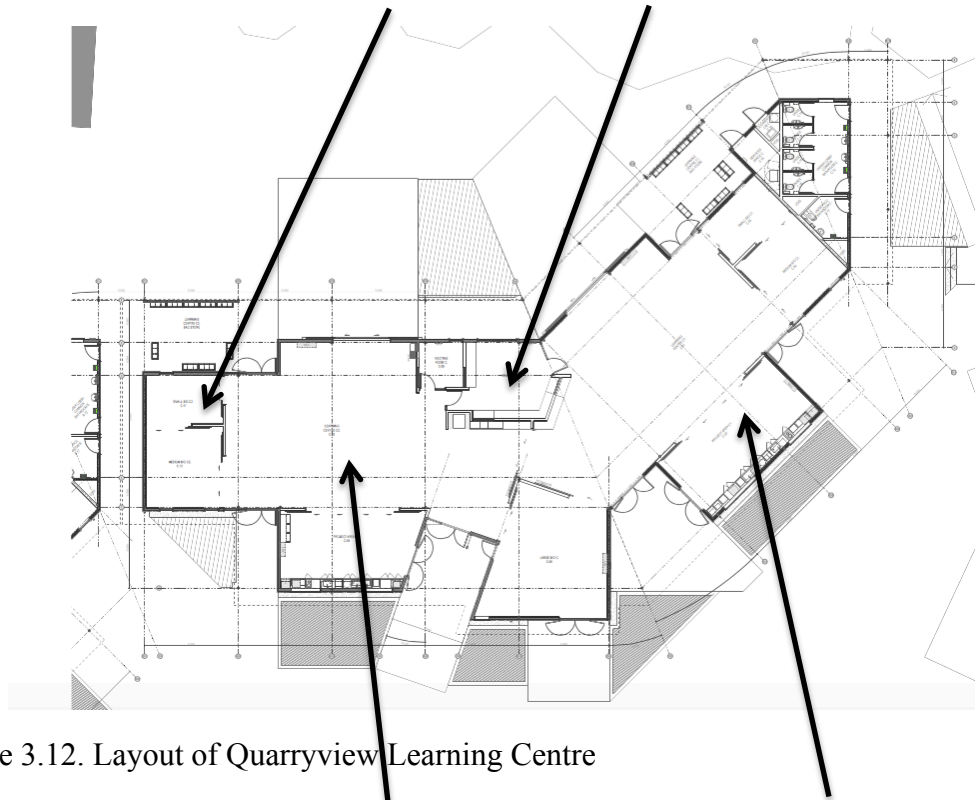


Figure 3.12. Layout of Quarryview Learning Centre



Figure 3.13. View of studio



Figure 3.14. View of art area

3.7.6 Case site 4: Lakeside Primary

Context: New school

Lakeside Primary is a newly opened (current roll 182) Year 1-8 school on a large site in a gradually developing high socio-economic housing area, in a semi-rural setting. It was noted as having a sophisticated learning environment design, modelled on an intent for ‘purposeful’ space. Central to philosophy of learning at *Lakeside* was a vision of developing inquiring, knowledgeable and caring young people. Recently signed as a candidate school for the International Baccalaureate (IB) Primary Years Programme (PYP) it was early in the journey towards achieving authorisation. Hence a strong focus for the school was on articulating and promoting the adoption of a set of attitudes and attributes that lay at the core of the IB model, and offered a shared language across the school. The principal viewed the PYP as one that would be strongly supported by a “shared collaborative approach” (Julie, Principal).

The Studio (Figure 3.15 and Figure 3.17) is home base for Year 5-8 students. The rectangular design contains a main studio space and five breakout spaces, each designated with different uses by layout and furniture. Moving in an anti-clockwise direction the additional ‘breakout’ rooms are:

1. Art space (Green room) furnished with three tall and one low table with stools. There are two sinks along a bench. One end wall is coated with whiteboard paint (Figure 3.18)
2. Collaborative space (Orange room) – containing ‘wobbly’ orange stools and small group tables.
3. Individual space (Red room) – with desks against 2 walls, a couple of study cubes and stools. There are also four ‘lecture style’ chairs with attached tables (Figure 3.19).
4. Performance space – unfurnished except for a couple of small stage blocks in front of a green-screen wall, with a pull down data projector screen in front of it.
5. Resource room – bench across 2 sides – shelves above. Storage for teachers and students (Figure 3.16).

Currently three teachers (Bev, June and Ken) work in the studio.

Research focus ILE: Lakeside Studio

3 teachers, 50 students (Year 5-8)

Approximate area: 240 m²



Figure 3.15. View of the studio



Figure 3.16. Teacher workspace/
resources

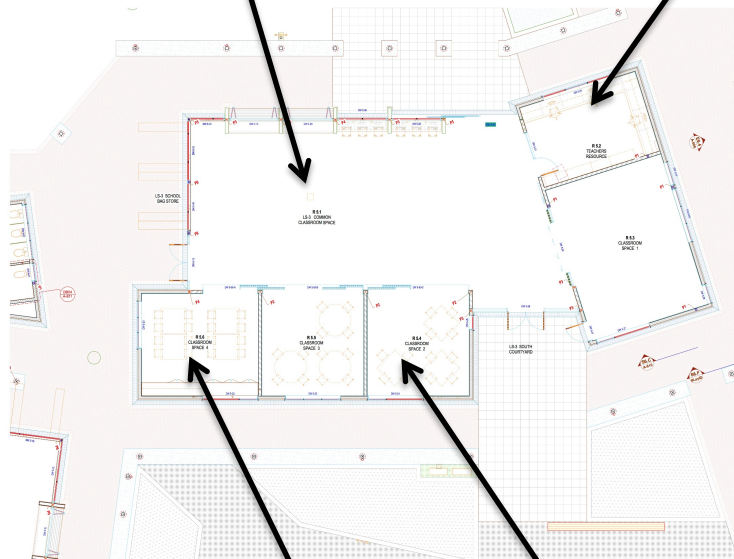


Figure 3.17. Layout of Lakeside Studio



Figure 3.18. Art space



Figure 3.19. View of individual room

3.7.7 Case site 5: Tidewater Primary

Context: New school

Tidewater Primary is a newly opened Year 1-8 school (roll 150) situated on a large site in a new and high socio-economic, suburban subdivision; the first school to be built in New Zealand under the Public Private Partnership (PPP) scheme, along with its sister secondary school, less than a kilometre away. *Tidewater* was repeatedly recommended during Phase 1. It is viewed as a school with a strong focus on providing a highly personalised approach to learning, and a strongly responsive approach to curriculum. Principal Dave defined their philosophy in terms of being strongly values and beliefs based; influenced heavily by the model proposed by Atkin (1996), and enacted through a set of principles and emerging practices. The school set out to foster a high level of learner agency, ownership and authenticity in students' learning and had adopted a highly differentiated and personalised approach in order to achieve it. Although it was recognised the student population was initially low, there was acknowledgement that it offered an opportunity to think differently about teaching and learning, in particular regarding the nature of collaborative teacher practice.

The school is designed as a single, elongated building with Learning Commons all accessed from the central and open internal walkway (Figure 3.20). Students are based in a *Learning Commons* (Figure 3.21 and Figure 3.22). In each common, as well as an open shared space there are also three 'breakout' spaces: one larger space (with potential to divide further with concertina doors) (Figure 3.24), and two smaller rooms accessible from the main space (with some visibility in and out). There is also a semi open teacher workspace, which is available for student use (Figure 3.23). Furniture is a combination tables and chairs of a variety of shapes, heights and sizes, and soft furnishings. Display space covered the walls, in the learning common and also adjacent 'corridor' area.

Research focus ILE: Tidewater Learning Commons

2 teachers, 42 students (Year 5-6)

Approximate area: 250 m²



Figure 3.20. Central walkway and access to ILE



Figure 3.21. Learning Commons from art space

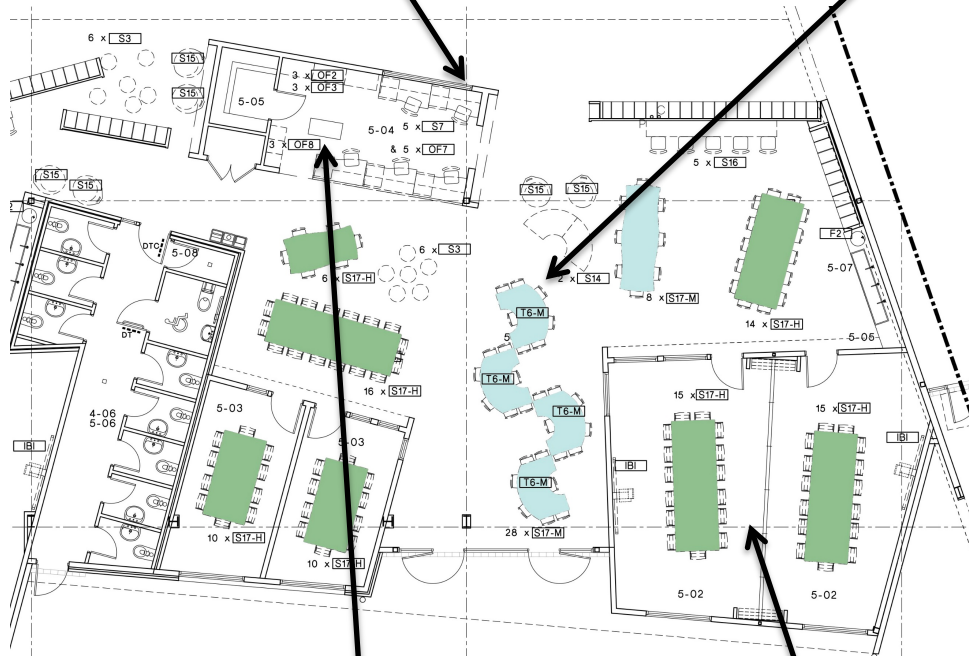


Figure 3.22. Layout of Tidewater Learning Commons



Figure 3.23. Teacher workspace/ resources



Figure 3.24. Large breakout space

3.7.8 Case site 6: Railway Terrace Primary

Context: Awaiting rebuild

Railway Terrace is a well-established 100 year-old Year 1-6 school in a relatively high socio-economic residential area on the northwest side of Christchurch. The school has a current student roll of 480 students. During the February 2011 earthquake the school suffered significant damage to buildings and services, particularly as a result of liquefaction and subsidence. Although repaired sufficient to be occupiable, two-thirds of the buildings are soon to be replaced. As a result the Principal embarked on leading a programme of prototyping learning environments. “Using existing old buildings we are ‘mocking up’ different settings and configurations using low cost materials then researching how they function as effective learning spaces” (Matt).

Although spatially the buildings at *Railway Terrace* are presently predominantly CEBUS relocatable designs, the school has been recommended for its intentional approach towards developing staff understanding of links between pedagogy, spatial settings, and collaborative practice. An independent approach to professional learning has led to engaging with a number of field-leading experts, not only in learning setting design but also in pedagogy and ongoing visioning, which has challenged the nature of the teaching and learning in place.

The ILE is a Year 3 and 4 learning space with 52 children. There are two teachers based here: Cathy and Kim, with Sharon in during part of the week as CRT release, and also on Fridays. This is considered to be one ‘class’ with two teachers, rather than 2 teachers and 2 ‘classes’ of children. The space is made up of two CEBUS relocatable classrooms (both approximately 70 m²) (Figure 3.28), with a central area between them forming a welcome area that contains a couch adorned with a variety of soft toys (Figure 3.26), internal access to boys and girls toilets, as well as to a small breakout space (previously a Reading Recovery room). One of the ‘classrooms’ (Figure 3.25) is designated for ‘student-centred’ learning, and contains a small kitchen area (Figure 3.28). The other has been designated for more ‘teacher led learning’ and instruction (Figure 3.29).

Research focus ILE: Railway Terrace Learning Studio

2 teachers, 52 students (Year 3-4)

Approximate area: 160 m²



Figure 3.25. View of Learning space



Figure 3.26. View of 'Welcome area'

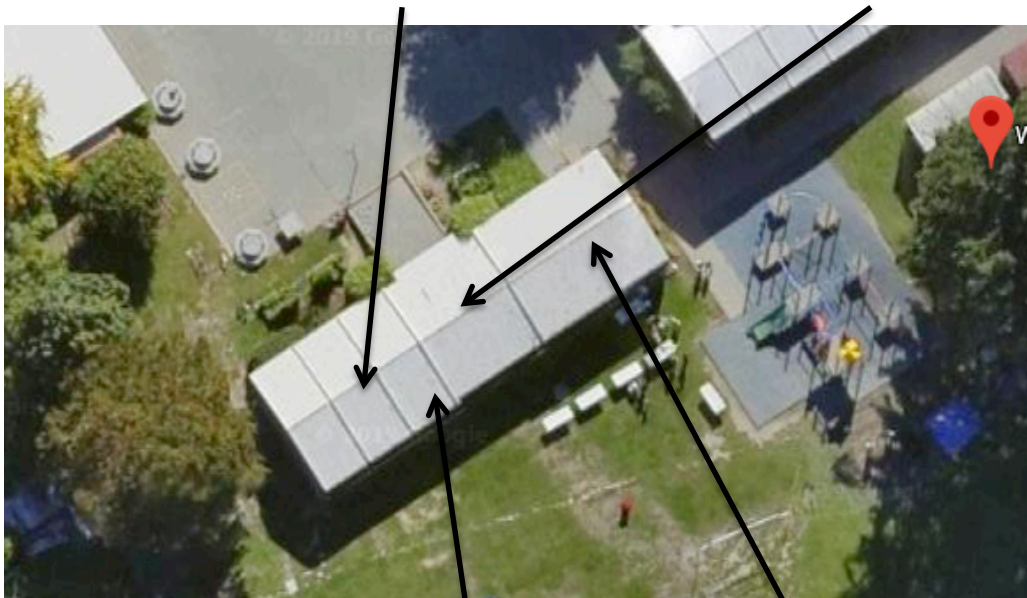


Figure 3.27. Layout of Railway Terrace Learning Studio



Figure 3.28. Kitchen area



Figure 3.29. View of teacher instruction area and group table

3.7.9 Phase 3: Site & participant continuation

For Phase 3 of the study, three schools were identified and approached as sites for continued study. Selection was based on ongoing analysis of data, willingness to continue involvement and confirmation that they fell within identifiable conceptual boundaries (Yin, 2014). Although challenging to decide which to continue to investigate, the advice from Stake (1995) proved valuable: “The first criterion should be to maximise what we can learn...which cases are likely to lead us to understandings, to assertions, perhaps even to modifying of generalisations?” (p. 4).

Sites selected for continuation into Phase 3 are detailed in Table 3.5.

Table 3.5. Sites selected for continuation into Phase 3

School	Year level of students	Context
Tidewater Primary	Year 5-6	New School (opened 2013)
Quarryview Primary	Year 3-4	New innovative learning environments opened in existing school
Lakeside Primary	Year 5-8	New School (opened 2012)

3.8 Ethical considerations across the three phases

Ethical clearance to conduct the research was granted by the University of Melbourne Graduate School of Education (MGSE) Human Ethics Advisory Group (HREC Ethics ID: 1442157). The code of ethics for professional and academic associations within the social sciences is based on four guidelines. These refer to informed consent, deception, privacy and confidentiality, and accuracy (Christians, 2011). The inclusion of children in the participant-set necessitated several additional considerations to ensure these principles were upheld (Alderson, 2014; Freeman & Mathison, 2009).

Informed consents to conduct interviews with Phase 1 participants were granted on an individual basis. For Phase 2 (and subsequently Phase 3), as directed by the New Zealand Ministry of Education, permission to conduct research in schools was obtained directly from school principals (schools are self-governing under a locally appointed Board of Trustees). Within each school, subsequent consent was obtained for all principal, leader and teacher participants. For all children within the ILEs, permission

was granted from parents, as well as from the children themselves. Participation in the research was entirely voluntary. Participants were able to opt out of the research project at any point, and request that unprocessed data be excluded from the study (to date, none have done so).

A series of plain language statements provided clarity and openness about the project and aimed to mitigate any ambiguity or sense of deception. Plain language statements were designed for all types of participants and stated the project aims, specific research focus, and, in the case of case-site schools, the expected duration of involvement. Separate statements were designed for Phase 1 participants, and Phase 2 participants (principals, teachers, parents and children). The later was in the form of an infographic in order to make it more ‘child-friendly’ (see Appendix X for copies of Plain Language Statements and Consent Forms).

Interviews with children were conducted in the proximity of another adult, often in the learning environment. It reflected broader concerns over child safety and acknowledged the necessity to adopt ‘cautionary practice’ in ensuring the researcher was not the sole adult in a room with individual children (Barker & Weller, 2003; Cameron, Moss, & Owen, 1999).

Confidentiality included issues of privacy and anonymity (Sieber, 1992). Pseudonyms were assigned to schools, rooms, teacher-teams, and participants to protect privacy and confidentiality. Care was taken to avoid the possibility of identification, although it was acknowledged with participants, there was a slight possibility of this occurring, given the context of the study. All data collected remained confidential and kept securely stored in a locked filing cabinet in the researcher’s home. Digital data was stored on a password-protected computer.

Photographs of learning environments in use, and not in use, were taken as part of the research. They formed part of photo-elicitation method with children participants, as well as used as an aide-mémoire for the researcher. Rose (2012) notes a tension between photo-elicitation as a methodological technique and the fact that few such studies include images in the final publications. Consideration, concerning privacy, confidentiality and the maintenance of anonymity was a particular concern in this case. The researcher, therefore, decided that images taken which contained people would not form part of the published material.

In order to ensure accuracy, verbatim transcriptions were made by the researcher in Phase 1, and by the researcher (with some assistance of an academic transcriber) in Phase 2 and 3 of the project. Adult participants were provided with copies of interview transcripts in order to ensure accuracy and offered the opportunity for further reflection and member checking.

In addition the following procedures were followed to minimise risk to participants:

- The researcher held a current and full New Zealand Practicing Teacher Registration (Number: 191541).
- Interviews and conversations with individual children were conducted in spaces where at least one teacher was present (visual contact).
- Primary data was kept in a locked filing cabinet at the researcher's home and on a password-protected computer.
- Data will be stored for a minimum of five years after the date of any publication or public presentation of any of the research. Audio recordings will be managed and disposed of in accordance with The University of Melbourne guidelines.

3.9 Suitability of research methodology and methods

The research aimed to understand the experiences and enacted practices of teachers working in primary school ILEs in New Zealand and understand the spatial implications of collaboration. Therefore an embedded case study with multiple methods was considered suitable for illuminating central themes, challenges and issues encountered. Within this, adherence to a three-phase approach successfully enabled progressive focusing to occur; considered a strong element of the research design.

Reliability and validity are essential criteria in confirming the relative rigour and merits of quantitative research outcomes. They are jointly concerned with establishing internal and external validity, reliability and objectivity (Bryman, 2012). Bryman (2012) draws on Guba (1981) and Lincoln and Guba (1985) in response to calls for increased rigour through applicable criterion in qualitative: trustworthiness and authenticity. The concept of trustworthiness identifies credibility, transferability, dependability and confirmability as key principles. Their application is addressed below.

3.9.1 Trustworthiness

3.9.1.1 Credibility

Building on Lincoln and Guba (1985), Shenton (2004) identifies a range of strategies to test how credibility (paralleling internal validity) is achieved. This research involved prolonged engagement in the field, with data gathering taking eleven months to complete. It included (where possible) a pre-visit to develop familiarity with the specific site context and culture (Shenton, 2004). Participant willingness was confirmed before data collection as part of the ethics process, and included an unconditional right of withdrawal (Shenton, 2004). Furthermore, in the three sites identified for Phase 3 of the study, a total of approximately three-four weeks was spent on-site. Persistent observation occurred through this time and allowed for in-depth insights to occur. Interview transcripts were made available for member checking. Debriefing took place regularly with academic supervisors during the data collection process.

Cross-checking of data was employed so that findings could be triangulated across more than one source of evidence (Bryman, 2012; Thomas, 2011a), and provided information that as Stake (1995) notes, “gives us ground for revisiting our interpretations” (p. 110). The interviews conducted in Phase 1 of the research involved a wide range of informants (17 in total) providing a robust corroborating platform.

3.9.1.2 Transferability

To Shenton (2004), “Ultimately, the results of a qualitative study must be understood within the context of the particular characteristics of the organisation or organisations” (p. 70). Shenton (2004) argues that achieving transferability (paralleling external validity) is somewhat problematic in that the research findings are specific to a particular set of circumstances. The use of a “thick description” (Geertz, 1973; Lincoln & Guba, 1986) is, therefore, a key component. Referred to frequently in ethnographic research, this relates to the quality of data presented to the reader, such that it forms a “written record of cultural interpretation” (Fetterman, 2010, p. 125). However to achieve a possibility of transferability, it is also the researcher’s responsibility to provide sufficient information, not only about participants, the context and specific case study site but also their own background and research process (Morrow, 2005; Shenton, 2004). There is also an emphasis on the role the reader plays, in that it will be through

their close reading of the study that will best determine how applicable findings are in their own context.

3.9.1.3 Dependability

Linked strongly to trustworthiness, the idea of dependability (paralleling reliability) is related to detailing processes and procedures such that if another researcher should decide to, they could follow the same research design, “if not necessarily to gain the same results” (Shenton, 2004, p. 71). To Shenton (2004) this can be assisted by articulation of the research design and its implementation, operational detail of data gathering, as well as a reflective appraisal of the project evaluating the effectiveness of the process of inquiry. This process of reflexivity also enables the researcher to understand how their beliefs, experiences and worldview impacts on the research (Morrow, 2005). Also, (Guba, 1981) recommends that research employs ‘overlapping methods’ in order to overcome invalidity in one of them, such that the strength of one method compensates for potential weaknesses in another.

3.9.1.4 Confirmability

Qualitative research, by default, is never going to be completely objective (Morrow, 2005). Confirmability, (paralleling objectivity), is therefore concerned with the integrity of the data, process and findings so that the reader can easily see the connections between them (Morrow, 2005). Bryman (2012) echoes this view suggesting; “the researcher can be shown to have acted in good faith” (p. 392). Although Guba (1981) propose an independent ‘audit’ of data and findings, this has not become standard practice. In this case, original recordings, transcripts, images, reflections and NVivo software have been retained for scrutiny should it be required (as per ethics requirements, for five years after publication).

3.9.2 Authenticity

The level of authenticity (Lincoln & Guba, 1986), achieved through the study is predominantly concerned with the attention to truth (O’Leary, 2010), mainly “while recognising multiple truths may exist”, (p. 43), and providing a description that is, “true to the experience” (2010, p. 43). Although often applied in the field of action research (Bryman, 2012), this study aimed to present participants’ viewpoints in a fair and

unbiased manner (fairness), and to produce an output aimed at ontological authenticity, in that it would help “members to arrive at a better understanding of their social milieu” (p. 393). In addition, descriptions recorded in the findings have aimed at capturing ‘true essence’ of the research contexts (O’Leary, 2010).

3.10 Limitations

Several limitations were identified in the design of the study. In particular concerning the challenge of addressing a phenomenon, which at the time, was not widespread. The design of Phase 1 was intended therefore to ‘cast a wide net’ in terms of issues raised, and also to elicit recommendations of possible sites to include. It is crucial here to recognise here that participants were selected or recommended based on their involvement, experience and expertise with ILEs; in effect, positioning them as innovators or early adopters (Rogers, 2003). Rogers (2003) offers the reminder that research into innovation of any kind can lead to ‘innovation-bias’ and a predilection for under emphasising the “rejection or discontinuance of innovations”, or to overlook re-innovation (Rogers, 2003, p. 107). Innovation and re-innovation emerge in the data in terms of both space and practice. Here, the ‘modern’ or ‘innovative’ provided a distinct, and for some, a welcome counterpoint to what has spatially gone before, but also included the admonishment that, “there is nothing modern about them” (Matt, principal), suggesting the need for ongoing circumspection.

In acknowledgement, some participants’ positivity is possibly attributable their being identified as ‘thought leaders’, or ‘thought leader sites’ in this area; they were broadly engaged in leadership work that supported teachers’ occupation of ILEs, and arguably had a vested interest in its success. Nevertheless this positivity did not go without the appreciation of it being an area that would present new and evolving challenges for teachers, leaders and schools, and would continue to do so as teachers change and teams develop. Factors illuminated across the findings point strongly to the fundamentally complex and dynamic nature of teachers working collaboratively in shared spaces, often simultaneously employing new or evolving pedagogical methods.

An additional and important limitation to declare is that produced through my own professional background and experience. Inescapably this includes an orientation towards collaboration as a positive, enriching concept, and of the fostering of teacher

collaboration is a ‘good thing’. But this, in the main, is not relevant. That position is an acknowledged understanding within New Zealand education and a premise on which several decades of educational reform has been based. Thus, this study is not an objective analysis of what is collaboration. Rather, an examination of how it operates, its characteristics and its strengths, that in sum lead the field to even better practices. Hence it was justified to locate sites deemed to be successful, in the tradition of Brinkerhoff (2003). To that end the Huxham (1996) heuristic of collaboration as ‘happening, valuable and difficult’, has itself been invaluable.

3.11 Supplementary research experiences

Many activities supplemented the research process, in addition to the reading, fieldwork, analysis and writing undertaken for this project. These included: continuing as Associate Principal at Stonefields School, Auckland, working on the second and third development of learning environments, conducting professional learning for teachers, and contributing to the day-to-day running of the school; attendance at events and conferences, and visits to multiple school sites, often made available through participation in Learning Environments New Zealand (Chair from 2016-2018), and Learning Environments Australasia events (Chair from 2018-2020). Moreover, from 2016-2019 a role as Research Fellow on the Australian Research Council Linkage project, Innovative Learning Environments and Teacher Change (ILETC), at the University of Melbourne, provided multiple opportunities to engage with colleagues from around the world, exposure to new thinking and ideas, and opportunities to collaborate on writing projects.

3.12 Conclusion

This chapter aimed to articulate the research process sequentially and transparently. It aimed to demonstrate to the reader how the researcher resolved a series of questions and decisions along the way relating to ontological, epistemological, and methodological components of the study. Also, the chapter intended to: (a) clearly explain the methods used to collect and analyse relevant data; (b) highlight any ethical considerations taken into account; and (c) how the researcher concluded that the approach outlined would accomplish the research objective. The following chapter (Chapter 4) reports on Phase 1 of the study; findings from interviews conducted with

seventeen school principals, educational consultants, and Ministry of Education personnel.

Chapter 4

Learning from ‘expert’ participants: Phase 1 findings

4.1 Introduction

Chapter 4 describes findings from Phase 1, the first of three layers of progressive focusing (Parlett & Hamilton, 1976) contained in the study. Phase 1 was designed as a bridge between findings from the literature review and engagement with teachers ‘on the ground’. The phase was critical to understanding local qualities and features of teacher collaboration and ILEs, conceptualising characteristics of pedagogical practices seen as successful, and identifying engendered opportunities and challenges. It also sought to understand local rationales for the shift in spatio-pedagogical direction. In addition, part of the data collection was tailored towards seeking recommendations of ILE schools considered by participants to be exemplar sites. This applied the technique of reputational site selection (Goetz & LeCompte, 1984; LeCompte & Schensul, 2010), which helped to resolve the selection process of suitable research sites, and provide a platform for subsequent exploration in Phase 2.

To accomplish this Phase 1 utilised the expertise of a group of ‘expert’ participants. Participants were selected because of their current roles in school and ILE leadership, or in professional learning. Participants were recruited initially through professional networks, and subsequently through a ‘snowball’ technique (Bryman, 2012).

Phase 1, conducted via interview, was highly informative but a long initial phase. It took several months to complete data collection with the seventeen participants situated across both of New Zealand’s islands and. The data collection stopped once (a) theoretical saturation (Bryman, 2012; Strauss & Corbin, 1998) was achieved, and (b) sufficient relevant sites had been repeatedly identified for Phase 2.

Data were analysed using an approach guided by the principles of thematic narrative analysis as developed by (Riessman, 2008). It allowed for key concepts and prior knowledge to help guide the inquiry, and at the same time supported the search for “novel theoretical insights” (p. 74). The approach also adopted a “zigzag” approach (Creswell, 2013), meaning cycling from fieldwork to analysis to fieldwork, to ascertain,

elaborate on and refine categories of information. This approach to analysis was maintained across the entire study.

The findings are described here in two sections. The first describes perceived rationales behind teacher collaboration in ILEs. It helps in understanding how change in spatio-pedagogical practice was understood, justified, and prioritised. The second describes implications for teachers and spans aspects ranging from teacher dispositions through to the practicalities required for successful implementation.

In each case, findings were arrived at through analysis of interview data, construction and development of a coding system, and amalgamation into broader themes.

In addition, the two sections of Phase 1 findings each conclude with visualisation in the form of an emerging model, employed here to help coalesce the findings as the study progresses and to articulate its layered approach to progressive focusing.

4.2 Rationales

The first set of findings describes perceived rationales behind teacher collaboration in ILEs. In broad terms, driven by a professional *raison d'être* – that of improving the educational experience, and outcomes for learners – based on belief and understanding this would be more likely achieved through teachers working collaboratively in an environment designed to support contemporary pedagogy. Rationales centred on the three interconnected areas of (a) *spatio-pedagogical alignment*, (b) *professional positioning*, and (c) *approach to learning*. They are presented here in turn.

4.2.1 Spatio-pedagogical alignment

The first sub-theme was *spatio-pedagogical alignment*; namely, the rationale that ILEs would more likely support contemporary approaches to teaching and learning.

4.2.1.1 Evolution of spatio-pedagogical thinking

Participants articulated the provisioning of ILEs as motivated by concerns over the relevance of traditionally predominant spatial structures in schools, and the

perceived unlikelihood they would successfully support contemporary or future approaches to teaching and learning. Consequently, they frequently referred to a seeming inappropriateness of classroom environments, reflecting pedagogical frustration with the status quo. In an indicative observation Douglas assessed, “We’ve got curriculums that are freed up, and yet we still have those same environments...they were built with all the internal structures and walls as single-cells, reflecting a view of education that was not going to change”.

Interviewees often depicted classrooms in this manner – as symbols of a bygone era – and descriptions of them as ‘single-cells’ or ‘egg crates’ readily repeated parlance. Likewise, comments referred to schools as metaphorical ‘factories’, ‘industrial models’ or ‘production-lines’; each analogous with educational models participants were ardently keen to distance themselves from. Classrooms had ‘served a purpose’, yet as exemplified by principal Brett: “our traditional schools weren’t built for learning. They were built for functionality as they saw it at the time”. In particular, these comments related to ideas of uniformity, repetition, prescription, control, compliance, and transmission; factors participants considered were reiterated through traditional built environments, neither inductive nor relevant to contemporary pedagogy. To participants, classrooms in primary schools were, on the whole, past their use-by-date, limited in their pedagogical relevance, and potentially stifling contemporary pedagogies.

Also apparent, however, was the conviction that while the ‘ILEs’ nomenclature had captured public attention, made way into the national educational discourse, and prompted furniture companies to rebrand items ‘suitable for ILEs’, this was notwithstanding the fact spatial change was a pre-existing idea. Participants, recalling experiences in their classrooms, were quick to regale the interview with recounts of challenging spatial norms in their practice, reiterating that the thinking was not new. As consultant Douglas described:

My classes always had couches and sofas in them. I tossed all the desks out and put great big tables that I’d got from somewhere. I’m not sure that I was doing that from a completely informed perspective so much as a response to intuition and thinking about the theorists on participation, activity, and group work.

Similarly, principal Barry spoke of collaborative practice in small rural schools:

I have a background of having taught in multi-level classrooms, and in a rural environment in particular, where we ran, in the old terms, open-plan, so I have that background in terms of recognising that there is tremendous potential for learning in using spaces flexibly.

A concern for Principal Matt, therefore, was a temptation to get caught in the rhetoric of educational jargon and trending ideas. For him, the relationship between pedagogy and space was a prime example, and in his view, concern ILEs were touted as ‘new’ educational developments, whereas, “Lots of the research that underpins what we do, or the philosophies underpinning what we do, is far from ‘modern’. You’ll find a truckload of Vygotsky and Dewey around this place, and that isn’t modern learning practice”.

Douglas viewed spatial change as a natural progression in educational practice; “a consequence of a whole lot of changed practice”, concerned explicitly with shifting the dominant locus of control from teacher to student, reflecting understandings of how children learn, acknowledging the impact of technology, and alignment with the intentions of the New Zealand Curriculum (Ministry of Education, 2007). Addressing this realisation, principal Matt, reflected that large-scale shift in school environment design would ideally, “honour and support the educative approach that the teachers have designed and refined over a long period of time”.

4.2.1.2 Pedagogical specificity and range

Notably within this thinking were two key ideas; firstly, that specific types of space could support specific differentiated types of teaching and learning; secondly that there was a broad range of these required to reflect a broad range of possible activities. Therefore the desire to personalise approaches to learning linked with access to a ‘suite of optimum environments’, providing students with what principal Barry described as “a greater opportunity to work within their own modality”.

Participants related this diversity to aspects of task type, group size, the immediacy of access to materials and technology, and requirements for acoustic separation. These were presented typically or conceptually. As consultant Max stated, “whether you’re learning to cook, or building a rocket, you’ll need a range of different

spaces. Also at different times, for reflection, collaboration, presentation, experimenting, building and making”.

4.2.1.3 School and the ‘real world’

In part, the rationale for teacher collaboration in ILEs related to ‘real world’ relevance; particularly concerning ‘21st century learning’ competencies, capacities and dispositions, perceived as desirable for future work, learning and life fulfilment. ILEs, and their associated potential for collaborative practice, did, as many participants described, present a spatialised response to this discourse; an opportunity to more realistically replicate environments requiring choice, self-management, decision making and problem-solving. Participants often drew parallels between ILEs, and ‘real world’ contexts or workplaces, often to competencies and skills anticipated to be required. To principal Dave, not only did employers require literacy and numeracy, “but they’re also going to need people to be able to use their initiative, take risks, and manage themselves”.

Similarly for principal Brett, ILEs formed a “better representation of the nature of the world that our kids are going to be entering”, where what would be valued would be, “skills to get on with others, being able to compromise, to negotiate, to think differently, and to work interdependently”. The perception was that these were more likely to be fulfilled in ILEs than traditional classrooms; inferring space had a specific role to play.

4.2.1.4 Catalyst for changed practice

The idea space might play an active role in fostering the type of learning occurring at school also extended to stimulating thinking, provoking pedagogical change, and ‘nudging’ professional practice. Principal Dave personified this as:

ILEs elicit challenge and the need for change. I think often a catalyst is needed for that, and space gives you that catalyst. Even in traditional schools, knocking out a wall means you have to rethink what you’re doing, and education needs rethinking. It needs a catalyst.

It was apparent amongst participants that systemic changes sometimes required a ‘nudge’. Often this was referenced in association with teachers’ experiences of

collaborative activity. Embedded within the data was the consideration that collaborative practice in ILEs reflected a significant change for the majority of teachers. One comment in particular revealed a perception of the predominant relationship between teaching and collaboration. As Principal Michael stated, “For most of us, collaboration was working nicely together in our staff meetings and our syndicate meetings and then going back to our traditional classrooms and doing what the hell we wanted”.

The notion of teachers having the ability to return to their own spaces, and do ‘what they wanted’ away from prying eyes, was prevalent. Tellingly, as consultant Douglas suggested, this admission, if not uncommon, was startling:

If you are looking at real practical areas that schools request for help, probably top of the list at the moment, is in understanding what collaborative practice is. I could fill all day and every day, responding to schools on that. It’s actually quite comfortable and safe to talk about collaboration when you’re inside your own cell, but you take the walls down and say, “How are you going to work?” We’ve talked about this for the last twenty or thirty years, so I think it’s a bold confession by schools to say, I don’t actually understand what it is.

4.2.2 Professional positioning

The second sub-theme was *professional positioning*; explicitly concerned with teachers, and their role in association with space, student learning, personal learning, and relationships with colleagues. The prevalence of data relating to positioning appeared prompted and associated with a shift into an ILE, hence interpretation as a rationale.

4.2.2.1 Positioning the teacher

Participants articulated the concept of ‘positioning’ both physically, and pedagogically. Physically, the notion of ‘frontness’ was often associated with a “very traditional, teacher at the front” (principal Donna), location within the classroom, often with a teacher desk. In contrast, the construct of ILEs engendered the idea of ‘no front’, or ‘multiple fronts’, from which teachers might teach, and the notion teachers would have “no front desk” (Kerry) exerting hierarchy. To some, it appeared to reflect a

realisation that teachers might be less evident in the milieu of the learning space. As noted by Principal Jason, whose early experiences of ILEs meant 'I'd go into a space and think, 'where the hell's the teacher?' It wasn't until I looked closely I see them sitting around on an ottoman and having relaxed discussion with the children."

Also, participants employed a range of terminology to articulate a preferred role of a teacher in an ILE, describing them variously as: 'activators', 'enablers', 'facilitators', and 'learning advisors'. As well as providing etymological evidence of a clear intention to towards adoption of specific types of pedagogical roles, it also indicated a shift towards power sharing in the learning experience. As principal Dave concluded the role, "has got to be more about negotiation, and chance to have deep conversations with kids". Hence a spatial 'nudge' provided by ILEs was found to relate directly to an expectation of the roles teachers would play, and how they would fulfil them.

4.2.2.2 Deprivatising practice

The concept of deprivitisation emerged through the interviews as a significant factor justifying collaborative practice within ILEs. Openness, as an affordance, was viewed as highly desirable in terms of improving practice across schools. To consultant Catherine, deprivitisation of practice had the potential to support and help nurture growth of a learning culture, or cultural change though schools:

I think it changes teacher's behaviour because you're constantly around other people and so you can't say you doing one thing and not be doing it because it's really obvious. Whereas when you're in a single cell classroom the espoused theory and theory in action can be very different.

Consultant Douglas acknowledged deprivitisation presented, "both a threat and an opportunity, with the threat coming from a self-consciousness that teachers sometimes have". A further example from Nicholas was that one of his teachers had been "very concerned about teaching in public". Similarly, principal Sharon commented on teachers' feelings that "it's quite tiring because they're always on show, that their practice is always exposed, they are always having to do their very best". In contrast, the relative isolation of previous 'single-cell' classrooms had provided a more private space in which to take risks, to fail, and to 'learn through doing' in a way though that

did not risk losing face publicly in front of colleagues. To principal Matt, practice in ILEs though meant, “baring yourself” for others to see, and reduced capacity to “control what was done and said when anyone else was present”. An opportunity resulting from deprivitisation, however, was increased, informal professional learning.

4.2.2.3 Situating professional learning

According to participants, ILEs held the potential for amplified opportunities for professional learning for, and between teachers; prompted specifically by physical proximity, adjacency, and immediacy to observable practice. Principal Peter described the benefits to a beginning teacher joining the ILE team. In his view she had been exposed to “modelling of good practice, all the time”, with the idea that she could ask a colleague, “can you observe me doing this, because I’ve noticed that this is happening, and I’m not quite sure how to deal with it”, or “get feedback on things that cropped up in a moment, which formal visiting and observation might never have picked up”. Equally, however, new teachers may also “identify a couple of things they did not want to do themselves” (Peter).

Also, participants spoke about ILEs as enabling a supportive model for teachers to take on new practices, and a powerful component in nurturing learning community, particularly in situations where teachers had shown reluctance to change. Principal Matt spoke about his experience, in that, “telling someone what they could try differently pales into insignificance of actually being immersed in it working with someone else and watching it”.

Again, participants recalled their own early experiences as spatially and professionally isolating. By their admission, their early careers had sometimes felt like “sink or swim” (Jason), working in “my domain, my kingdom” (Donna), unfettered by the gaze of others. Several principals spoke of being reassured their experiences would not be replicated.

4.2.2.4 Modelling learning & collaboration

The opportunities that an ILE gives are more diverse, and it enables modelling by teachers of collaboration (principal Barry)

Where adjacencies and immediacy were related to teacher learning, participants also considered them to offer benefits for students' learning. A facet to professional proximity in ILEs concerned the capacity of a group of teachers to activate and make visible, learning between them; in essence to exemplify and articulate teamwork, collaborative strategies, and learning behaviours to students. For principal Brett, this involved modelling compromise and negotiation; something he felt, "you couldn't do so easily if you're working in isolation". Participants considered modelling could focus on celebrating shared successes as well as things that did not work. Here, deprivitisation related to making teacher-teacher learning visible to students, activating an aspect of adult interaction, which in previous spatial models remained hidden or reported. As consultant Catherine noted, "the adults have a responsibility to model collaborative practices so that kids can see the adults talking together and making mistakes and changing their practices". Common to this thinking was the idea of building a more inclusive learning community where teachers could be learners themselves. As principal Michael noted, "the teacher/learner idea is fluid in that concept of the learning community". Participants considered The act of clustering teachers together in ILEs w performative in helping to establish this connection for students, and axiomatic of bringing about a professional 'togetherness' absent in traditional settings.

4.2.2.5 Sharing responsibility

If part of the rationale pertained to 'what could be learned' another pertained to 'what could be shared'? Although taking collective responsibility for a cohort of students was viewed as a significant departure from traditional student groupings, it was a crucial rationale behind a shift into ILEs. Participants felt that it was becoming more challenging to meet the particular needs of an increasingly diverse cohort of learners, so clustering of teacher expertise had a critical role to play in knowledge sharing, problem-solving, and enhancing opportunities for students, mainly as schools explored new pedagogical and spatial approaches. To consultant Max there was a realisation that "you do not have to be an expert in x, y and z...so the behaviour changes to being more about connecting kids with other learners, and with teachers who can help them with that particular need". It was also commonly noted that teachers could work with students in different contexts and therefore share different "points of view about how a particular

child might best learn” (Barry), perspectives which previously may have gone unnoticed.

As a consequence, principal Peter, considered teachers were “really looking at individual needs more intensely than before”, with “a step up in the level of the reflective discussions that go on around the grouping process and next steps”. Some principals reported this intensity as having an impact on communication with parents. As Principal Jason noted, “what it did was give confidence to the parents that there are two or three teachers that have explicit knowledge of my child, not just one for the whole year”, providing a degree of triangulation when it came to learning, assessment and reporting.

With shared responsibility also came shared professional accountability. For principal Brett, it was “because your entire delivery of the programme is connected to 2 or 3 other educators in the room, you’ve got to pull your weight”, a reflection on teaching quality, shared expectations, and the public nature of some of that work. Similarly, principal Peter considered accountability was a function of shared settings. “Deprivatisation calls teachers to account with their colleagues which is probably the most powerful account of all”. His perception was of an increase in overall quality of practice since teachers had begun to occupy new and shared spaces.

4.2.2.6 Creating efficiencies

Closely related to the idea of sharing responsibilities, participants viewed the opportunity for teachers to work together within a shared ILE as a way of cultivating, utilising and leveraging teachers’ interests, talents and expertise – as well as leading to the facilitation of flexible groupings and greater personalisation of learning for students. For principal Tim, there was potential for “building of a super teacher”, so that pedagogical expertise conglomerated within a team – a heterogeneity that could potentially provide a diversity of possibilities.

It was also associated with the belief that some efficiencies could be created by “being smarter” (Peter) in team settings. Participants considered team members would be able to divide administrative, planning, and teaching tasks, and in doing so create some cognitive and temporal efficiency. Principal Jason proposed this would provide a

means to “do things more effectively by utilising our colleagues around us as opposed to doing it all on our own”.

4.2.2.7 *Workplace enjoyment*

The idea that shared spaces might result in higher levels of teacher workplace satisfaction was also noticeable through the data; specifically related to the ideas of enhanced collegiality, support mechanisms, load sharing, and professional satisfaction. Enjoyment often emerged in the data as a direct contrast with traditional school settings – perceived as professionally isolating – rendering teaching a “really lonely profession when you close the door” (consultant Max). Accordingly for principal Nicholas the acknowledgement that, “our teachers say they don’t want to go back to single-cells, they enjoy the collaborativeness”. Likewise, principal Peter perceived “teachers can share joys, and celebrate things, their student successes at the moment, at that very time, when it happens”, something that in his view had contributed towards professional satisfaction and collegiality. Participants did not consider collegiality a replacement for collaboration, but in conjunction was a positive outcome. As principal Matt noted, “are you collaborating for the sake of the teachers enjoying their coming to work, or is it making an enhanced difference with the kids?”

4.2.3 *Approach to learning*

The third sub-theme emerging from the data related to the approach to learning; a cluster of concepts pertaining to pedagogical possibilities, which, through the provision of a collaborative teacher-team were perceived to be amplified or potentialised; namely, learner agency, responsiveness, and engagement. Participants were keen to point out these were not unavailable or unachievable in a traditional classroom setting, but potentially ‘more available’, or ‘more achievable’, in an ILE due the way teachers could be deployed.

4.2.3.1 *Responsiveness to learning needs*

Describing the rationale for teacher-teams in ILEs, a significant motivation for participants was creating pedagogical environments where teachers would, between them, have increased capacity to more readily respond to learners’ needs. For principal Dave, it presented an opportunity to co-construct, differentiate and in doing so become

more “student-centred”, “looking at a group of kids that are all ‘ours’, and see themselves as having two, three, four teachers as experts to support their learning”. Similarly, for principal Barry, “we’re becoming more tailored, like the tutorial group where children can opt into things, and others hang in because they’re interested”. Furthermore, to consultant Douglas, it created an opportunity for a team member not to be engaged in explicit teaching; instead, to be on the lookout for emerging needs:

What you get is maybe two of them are very engaged in the instructional stuff, and one of them is on the hover looking at all of the emergent behaviours, emergent needs that come up, and are able to respond in an instant.

For principal Dave, responsiveness formed an underpinning belief around ILEs, curriculum, as well as the role that teachers played, yet was challenging to achieve. Correspondingly, in his view, it was critical that “you’ve got to encourage staff to think differently about their planning, and how they use their time. That is when you can then be really responsive in your planning and responsive in your learning design”.

4.2.3.2 Fostering student agency

A key rationale underpinning ILEs and teacher collaboration was in the relationship perceived with development of practices affording higher levels of student agency, choice, autonomy, decision-making, self-direction, or self-management. Consultant Max described the importance of passing agency or control from the teacher to the learner. Put simply; this was associated with choice:

Providing any kind of choice in learning is powerful...so they’re able to make choices about what they learn, when they learn it, how they learn it, with whom they learn it, the resources they require...even if it’s a choice between working sitting down or standing up, those minor little choices build student control and agency over learning.

Similarly, for principal Dean, a strong desire for increased learner agency and choice for learners formed a key reason for the school’s spatial change. It was an expectation that teachers would monitor and actively teach strategies to support choice making: “That’s one of the roles of the teachers to keep an eye on. But actually the kids do it themselves really well. They sort out who’s going to go where and who’s the best person to work with”.

An additional facet of agency discussed in ILEs was the provision of opt-in style ‘workshops’ for students, based on needs. Moreover, these could be an outcome of self-assessment practices and culture of decision-making. For principal Nicholas:

Even five-year-olds are getting to make those decisions, booking into a workshop on finger spaces, or a to make capital letters. We’re excited to see what happens when those kids who understand more of learning goals, come up through the school.

To principal Dave, potential lay in the capacity to extend this by strengthening components of co-design with students. In his view, this not only increased levels of agency but also increased learning-focused behaviours and engagement: “when you hand it over to the kids and get them engaged in designing the learning you tend to lose all those issues, and it doesn’t become about management, it becomes about leading learning”. The inference, in much of the data, was that increased student agency was a key driver for participants, a concept revealed to ‘more likely’ be afforded by teacher-teams in ILEs than those practicing alone in individual classrooms.

4.2.3.3 Maximising student engagement

A comment from principal Jason regarding agency reflected another common theme; that engagement could be a by-product of a move into new spaces. “Choosing where they work, whom they work with, and what they work with, has been a huge influencer on engagement. That showed me it was working”. Likewise, anecdotal measures of student engagement were often utilised as informal evaluation to determine how well the adoption of new spatial settings was occurring.

For one participant, principal Dean, a key incentive for converting existing classroom spaces into ILEs was, “for our senior kids in particular, both their engagement and behaviour were deteriorating...we felt that there was something better out there”. Evidence collected on the School Management System pointed towards behaviour incidents in school dropping, “about 70%... because our senior kids are very settled and very engaged, also because the teachers have much more connection with their kids in the classes”. Other principals reported similar evidence. They also often noted the additional presence of teacher aides within ILEs, which added to the number

of available adults and was perceived beneficial both from learning and management perspectives.

The idea that a teacher-team could be more responsive to behavioural concerns presented a thread of data that connected strongly with student engagement and agency. Specifically, this was concerned with what might constitute ‘monitorial’ practices, and the idea while some teachers focused on teaching, others could be in ‘responsive mode’ to deal with arising issues. As Principal Nicholas related, in traditional settings a small number of students could potentially “disrupt that whole learning”, whereas the provision of multiple adults could then ensure “one teacher can just withdraw those two of three children and work with them, and the rest of the learning can happen”. Correspondingly there was a belief that the shared responsibility for behaviour management within an ILE would result in more focused teaching practice.

4.3 Emerging model: Rationales for teacher collaboration in ILEs

In summary, the general rationale for teacher collaboration in ILEs is summarised as a professional *raison d’être* – that of improving the educational experience and outcomes for students – based on belief and understanding this is more likely achieved through teachers working collaboratively in an environment designed to support and encourage contemporary approaches to pedagogy. As discussed, when examined further the data revealed this pertained to aspects of spatio-pedagogical alignment, professional positioning, and approach to learning. In order to present this thinking as a component of the entire study, the following iterative model is offered. Components will be added as the study unfolds in order to help with articulation of the key themes encountered. It is shown in Figure 4.1.

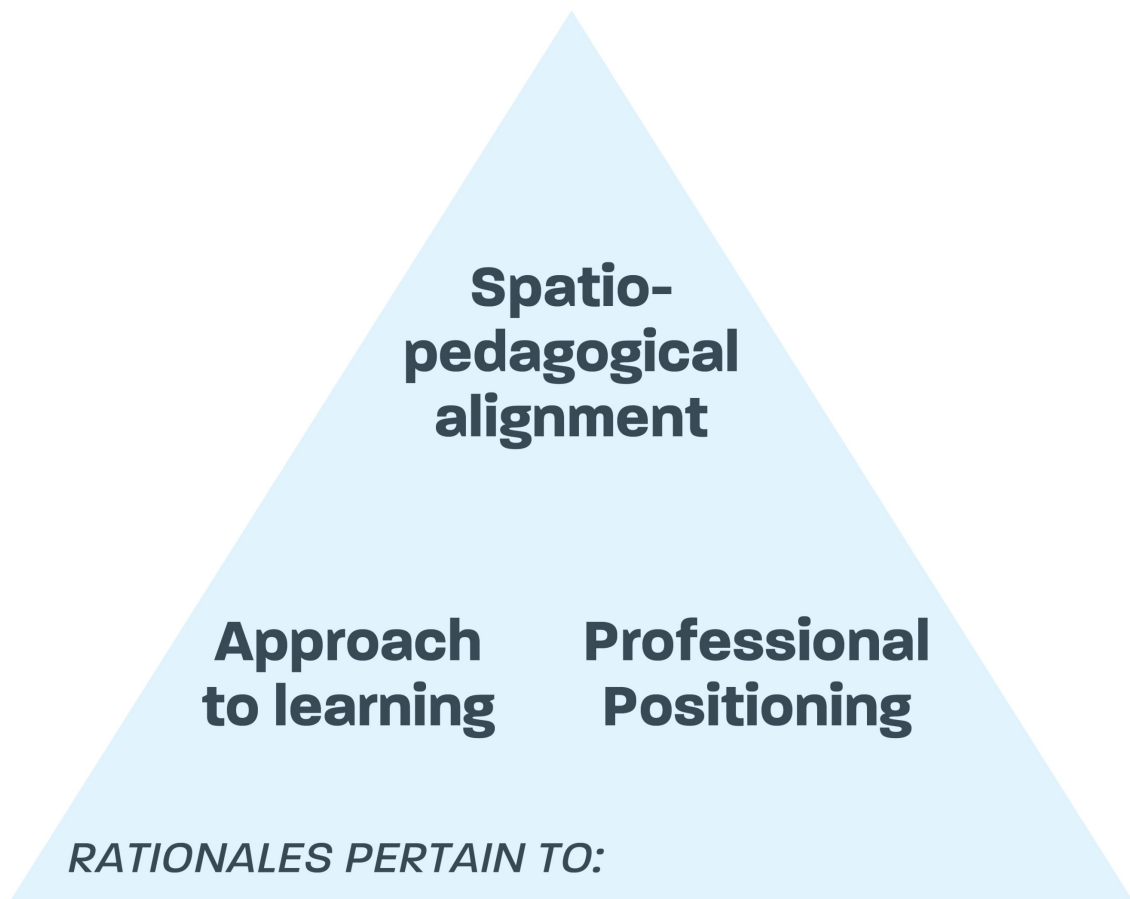


Figure 4.1. Rationales for teacher collaboration in ILEs

4.4 Implications

The second set of findings in Phase 1 pertained to *implications*. These encapsulated participants' lived experience and engagement with teachers' occupation of ILEs and described perceived implications for teachers, teams and schools undertaking a shift to collaborative practice within ILEs. Specifically, three sets of implications emerged, which can be articulated as (a) *implications for individual teachers*, (b) *implications for teacher-teams*, and (c) *practical implications*. They are presented here in turn.

4.4.1 Implications for individual teachers

The first sub-theme, *implications for individual teachers*; related to beliefs, attitudes, and qualities, which, beyond being a quality teacher, were perceived to be beneficial to possess, or at least work on, in order to maximise opportunities of working together in ILEs.

4.4.1.1 Comfort with change and ambiguity

Amongst participants, there was little hesitation in suggesting a move into ILEs constituted as a significant shift for the majority of teachers. “Change...” as principal Julie explained to prospective teachers, “is the only thing that I can absolutely guarantee you around here”; a sentiment often replicated by participants, many of who described themselves as ‘change leaders’. They acknowledged this could be an uncomfortable space for teachers to occupy. It translated into a desire for teachers to have an understanding of the broad-scale global context, comfort with ambiguity, and capacity to be adaptable and flexible. As principal Brett accepted, “the natural human thing is to revert to type and what you feel comfortable and successful doing”.

For principal Matt, in particular, the specific challenge came when teachers found themselves less confident in a role they considered themselves proficient. He framed this using the *Conscious-Competence Model* (Howell, 1982), where learning moves through a four-step progression from ‘unconscious incompetence’ to ‘unconscious competence’ – “doing high-quality teaching without even thinking about it”. To Matt, the shift into ILEs resulted in noticeable cognitive load on teachers as they went through this progression:

Moving into these collaborative environments puts a cognitive workload back on teachers that they might not have had since, if they haven’t been doing study, then probably back to university. They have to work out, ‘what is this all about?’ And that’s hard yakka.

There was also realisation of the level of cognitive effort required in working closely with colleagues, especially while establishing new ways of working. As principal Brett stated, “nobody could fully understand and appreciate the mental load this puts on teachers and the fundamental change in what’s got to occur”. In his view, it was because “we’ve never been trained this way...we’ve never had to experience this...we’ve never had to get our heads around it”.

Also, there was a strong sense of participants wanting to challenge the status quo, which for many resulted in periods of uncertainty or ambiguity. Consequently, for Brett “what I’ve got to be careful of is managing that pressure. I mean, I want teachers to feel a healthy sense of tension and challenge, but I don’t want to burn them out”. For

school leaders like Brett, creating the cultural conditions for this change to occur in a psychologically safe way, underpinned much reflection and consideration.

4.4.1.2 Belief and understanding about ‘the why’

What’s really interesting is you realise the kind of dispositions that teachers need to demonstrate in these new environments; the problem solving, the resilience, the communication, are exactly the same skills that we’re hoping to develop in the learners. That’s a wonderful penny-drop moment. (Consultant Max)

In much the same way participants voiced their rationale for the shift into collaboration in ILEs, they also viewed it as an essential process for teachers to go through. The principle underpinning this was that in grounding new practices in well-understood and articulated belief, they were more likely to be successful and sustainable. To those working directly with teachers, it was a fundamental but slow process; and as the quote above alludes to, best supported by professional inquiry. To principal Matt, regardless of the school’s articulated vision, it was important for teachers to arrive at their own conclusions: “Education is an act of the person; it’s an act of feeling and knowing and way of being, of deeply understanding the personal ‘why’”.

Participants, including Matt evidenced several models employed to support teacher’s thinking; specifically about beliefs and practice, such as those devised by Atkin (1996), or Sinek (2009). They recognised that; “teachers haven’t been asked the question ‘why’ many times. You know, what’s your belief around assessment or something? They can talk about practices till the cows come home!” (Brett). It echoed a contention for many participants. Hence, for consultant Douglas, a shift into ILEs presented an opportune moment to challenge some embedded assumptions about engrained practices, such as, “why have you got a timetable? The principle is that kids need to be organised and structured, and their time needs to be managed”. Participants considered creating clarity and shared belief around essential conceptual understandings was time well spent, and often a focus of professional learning. At times these inputs had drawn on experiences and expertise outside the usual educational field, for example through business, or human psychology.

4.4.1.3 Understanding of self and empathy for others

Made apparent to principal Barry, “some people had not realised their own little idiosyncrasy until somebody has quietly pointed it out to them” In this respect, reflected through the data was the utilisation of professional learning, tools and strategies, which principals had sought out in order to develop self-understanding amongst teachers; described as particularly important when initialising engagement in collaborative ways of working. Prevalent amongst these was the psychological construct of ‘growth’ mindset Dweck (2006). Proposed by psychologist Dweck (2006), growth mindset “is based on the belief that your basic qualities are things you can cultivate through your efforts” (p. 7), in contrast to a fixed mindset where “qualities are carved in stone” (p. 6). As participants described, teachers with ‘growth mindsets’ would have an advantage over their peers in their desire to learn and grow from experience and application; even though, it was acknowledged, “some find that really challenging” (Dave).

Besides, participants cited several models employed to support building teachers’ self-awareness, or consciousness-raising about their behaviours or tendencies; the motivation being that in a collaborative setting there was realisation behaviours or ‘ways of being’, could impact on others in ways previously less evident. These included Myers-Briggs (Myers, 1962), (Belbin, 1981), Herrmann Brain Dominance Instrument (Herrmann, 1999). These models served four purposes:

1. Providing language to help build teacher’s self-understanding, particularly of resilience, challenge, reactions, and dominant behaviours;
2. To build awareness of how others might interpret these traits;
3. To help build empathy for others’ traits, behaviours and responses;
4. To build the capacity, willingness and trust to be able to articulate and illuminate with colleagues

To principal Peter, there were adopted not with the intention of ‘excusing behaviour’, instead to build awareness:

So when we’re presenting challenges or dealing with an issue, you understand that people are going to attack it in different ways. And that’s fine. Just being sensitive or understanding. It doesn’t make an excuse for behaviours, so there’s no excuse for you going to snap at me because you’re a red dot, that’s not excusable, but at least now I know why.

4.4.1.4 Accustomising to new forms of working

The desire to develop collaborative ways of working was a fundamental component of the shift into ILEs but recognised as a significant area of new learning for the majority of teachers. One comment, in particular, revealed a perception of the predominantly familiar relationship between teaching and collaboration; “For most of us, ‘collaboration’ was working nicely together in our staff meetings and our syndicate meetings and then going back to our traditional classrooms and doing what the hell we wanted” (Principal Michael).

If somewhat tongue in cheek, this was nevertheless, a telling comment; pointing to the realisation that what ILEs were asking of teachers was above and beyond more familiar experiences of collaboration. Accordingly, participants spoke of areas for individual teachers, which may have required adjustment, modification, or ‘unlearning’ (including the development of shared approaches, roles of individual teachers, noise, management of time, grouping of students, and the use of technology). Moreover, in order to do so, teachers in ILEs would need to engage, not only in different ways of working, but become accustomed to different ways of thinking about, and talking about, what they were doing; and at the same time hone skills of compromise, dialogue, discussion, decision-making, problem-solving, and communication. For principal Brett, the change in decision-making was cause for reflection:

You know, if we’re honest, in a single-cell experience, if you wanted to have 5 minutes sitting down or, I don’t know, read the story for a bit longer or carry on that class discussion for a little bit longer or spend another few minutes with that guided reading group, that was a conversation you had internally and made a decision, and you acted on it. Now, I’m not saying you can’t do that in a collaborative space, but it’s not necessarily your decision to make.

To consultant Douglas therefore, a critical requirement and skill to develop was in becoming explicit:

Because we work, I would say, at least 80% of our role, every day as teachers, is on the implicit side of the scale. We just go and do it. To be effective as teachers, we have to reverse that. We have to find ways in which an increasing amount of what we do is explicit.

Significantly much of what needed to be made explicit was in the role played by the ILE space itself; expressly when framed against classroom models, often metaphorically represented as an individual teacher's sole domain (principal Donna), or 'kingdom' (principal Julie), over which teachers had enjoyed a high level of jurisdiction and privacy.

4.4.1.5 Accustomising to new forms of spatiality

Although not articulated in terms of 'spatiality' by participants, areas illuminated for individual teachers to grow accustomed frequently appeared spatially related. Foremost amongst these was the apparent visibility, often couched in terms of professional deprivatisation, afforded by ILEs. To principal Michael, this was an essential aspect for people to come to terms with:

We've talked about that a little bit, that notion that people are going to be seeing what you're doing. You can't hide. There's no way you can hide from the responsibility; you're contributing towards the planning, contributing towards the assessment process, contributing towards how the classroom functions.

Similarly, in the view of Principal Barry, some teachers had moderated their behaviour: "Some of those who ran very noisy classrooms, which were always busy, and stuff was happening, have tempered that. The environment that we've got now has definitely reined some of those people in".

Participants also drew attention to practices that perhaps were tacitly approved of previously which, in shared situations, may be harder to ignore. Furthermore, for principal Brett, there was a need to develop cultural norms about how people responded:

The nature of the space surfaces stuff a lot quicker than it would be in a single-cell environment. So I'll give you a specific example. A team leader might walk past one of the teachers teaching reading, and click to something in their delivery of a guided reading lesson she's not comfortable with. And because they're in that open, collaborative space, she sees it, observes it very quickly, can choose how she wants to tackle that. Beforehand it might have gone on for years without being noticed and feedback given on the practice; I think that's a

real opportunity. The challenge for us is to how we create a culture that values that immediate specific feedback, because it's all about improving practice.

Nevertheless, in some participants' evaluation, the fact that teachers were in ILEs did not make them immune from creating 'kingdoms' within. Principal Peter spoke about visiting some ILE as part of his thesis research, and found examples where teachers, "were shut off, everything was papered up, and things blocking it so that they operated as a single-cell". Similarly, Principal Barry spoke about needing to discourage teachers from what he called "camping"; occupying the same position in the ILE daily, often corralling student furniture around them in order to create a default classroom. Participants were not altogether surprised to see teachers doing this. As principal Brett mentioned, some designs made this reasonably straightforward to do, if inadvertently. Reflecting on a visit to a relatively newly opened school he noted that, "if it wasn't for the leadership in the school, you could actually go back to a reasonably traditional single-cell experience in the space of a very short period of time".

4.4.2 Implications for teacher-teams

The second sub-theme emerging from the interview data related to *implications for teacher-teams*; related to formation and maintenance of the team, dynamics, communication, and conflict, perceived to be instrumental components of team functionality in ILEs.

4.4.2.1 Forming and maintaining teacher teams

Although participants noted the deployment of teachers into teams within schools was a familiar and well established organisational structure, they recognised the requirement for ongoing collaboration presented an additional need for deliberation and negotiation in the team-making process. Participants offered several possible approaches along a continuum from pre-determined by leadership, to self-selected. Principal Jason, for example, had asked teachers; "who do you want to work with" and "who could you work with"; although reflecting on this process admitted it tended to, "highlight the people who people did not want to work with". Principal Barry referred to this sort of occurrence as anticipated but "problematic"; an issue that needed to be dealt with tact and professionalism, to avoid simply "shipping them out to somebody else".

For many participants, the more teachers sharing the ILE the more complex teamwork, decision-making and communication became; although inherent within the design of many of the ILEs was a designation of the number of teachers accommodated within the space. The optimum number of teachers working together in an ILE, however, was often raised. Barry noted, “to get three to work together is possible, but I could see where it wasn’t working overseas when there were bigger groups, with too many dynamics for anybody to control”. One principal took Stephen Heppell’s thinking of the ‘rule of three’ and had constructed teams accordingly. For him, the third person had enabled a higher capacity to have two teachers working with groups of students, while the third acted in a “roving capacity to be able to support”. However, for principal Julie, “three is hard” making it, “more like a flatting situation”. Similarly for Tim, just having two teachers together was “a bit like an arranged marriage and if something goes pear-shaped...it could be disastrous”.

A further consideration identified was prompted by the concern teacher-teams become overtly inward-looking. “Do you create just bigger silos” was a question posed by consultant Catherine, highlighting her concern that teams might develop into discrete microcosms within the broader school. School leaders were also required to decide the duration teams remained together. There was some evidence of this having occurred in practice. Principal Peter had identified a need to introduce cross-school peer structures following discussion with his staff, prompted mainly by a teacher noting, “I don’t know whether I like this. It’s starting to feel like we’re two different schools”.

4.4.2.2 Team dynamics

Participants understood that teams would encounter pedagogical and interpersonal issues during establishment and ongoing work. Principal Michael referenced the Tuckman (1965) model of group development:

When the wheels fell off the first time you don’t take it personally; you’re solutions-oriented. You start thinking, well I knew it was coming, we’re going to deal with it. You’ve got to have that understanding I suppose and be prepared for it. That’s why having the understanding of form, storm, norm, perform is really important.

Participants noted that what was critical were the school culture, feedback loops, teacher mindset, and problem-solving approaches that would enable teams to be able to resolve issues in a timely and professional manner. Implicit within the data though was the constant reference to teacher's ongoing work with other adults. Although not presented as a significant concern for participants, the acknowledgement was that teachers were generally drawn to the profession, "because they loved working with kids" (consultant Catherine). Hence for many, there was a concern that teachers were not necessarily either trained or well prepared for collaborative work. Principal DB pointed out:

Where do you get taught how to collaborate? Where did you get taught the skills of working with someone, or listening to their opinion, or being able to critique someone's work constructively...so the challenge is, how do you encourage staff to do that in a safe environment?

4.4.2.3 Communication & conflict

Participants realised conflict or disagreement between team members was as an inevitable by-product of working in close proximity. Therefore, they considered it fundamental that teachers had both confidence and skills to be able to address issues that arose – something that potentially required new learning. Conflict resolution was described, as a desirable attribute for staff within any school, but prompted the realisation such needs appeared amplified by new spatial settings. Although often presented as a negative characteristic of collaboration, it was also one that was considered an inevitable by-product of teamwork and could present a valuable learning opportunity. For consultant Catherine:

There has to be a bit of cognitive dissonance. There has to be an understanding that collaboration isn't always positive; that conflict and collaboration is an essential part of the growth. It comes back to the staff being able to have those difficult conversations, and have shared language and culture that's built in advance, so when they get under pressure, or things go wrong they have protocols in place rather than waiting until it goes pear-shaped.

Participant frequently referred to the importance of developing teacher capacity to engage in 'open to learning', or 'difficult' conversations, rather than avoidance

altogether. “I don’t want to upset her”, principal Barry noted was a common reason teachers did not engage in such conversations. Similarly, multiple participants referred to the co-construction of team agreements before working together. Often termed ‘team agreements’ or ‘essential agreements’, the idea was teams would dedicate time towards developing a set of norms which could act as pre-determined reference points in the event of disagreements arising. Principal Barry described this as “getting protocols in place for the teachers actually to use as their boundaries for collaboration”; addressing matters of meeting times, tidiness, timeliness, as well as shared routines. Some were seemingly small concerns, but could if unchecked, become what principal Sharon characterised as the “elephant in the room”.

4.4.3 Implications for practice

The third sub-theme *implications for practice* pertained to practicalities specific to working collaboratively in ILEs, particularly to time, technology and organisational factors.

4.4.3.1 Developing organisational approaches

It’s all very well to say everybody is taking responsibility for all the learners but how does it actually transpire into what’s happening with the children in the classroom? (Michael, Principal)

I’m constantly amazed at how much structure and organisation you need to have to be truly flexible. (Peter, Principal)

The two principals recognised collaborative working arrangements often amplified a need for systems and routines. Common elements addressed through interviews included: class and grouping structures, pastoral responsibility, accountability systems for attendance, students’ progress tracking, communication, reporting to parents, and timetabling. Often these had formed initial concerns for teachers, wanting reassurance for themselves and parents, especially around rigour in new collaborative settings. Navigating structural elements; mostly, who was doing what, with whom, at what time, and where were they doing it, was considered potentially challenging organisationally, introducing a degree of complexity beyond that experienced by a single teacher in a traditional classroom environment. Hence,

principals noted their teacher-teams had dedicated considerable time towards working out how this might look.

Furthermore, the adoption of new practices, particularly those associated with developing levels of choice, agency, and self-management in students, while retaining flexibility, were also viewed as prompting a need for agreed systems. Hence for principal Dave, “if the language of inquiry is the same, then when I go from space to space, it means I don’t have to relearn it all the time”. It exemplified the idea of ‘soft systems’, such as the use of shared language across the ILE; seen by many participants as an effective way to support students working with multiple teachers.

Notably, uses of virtual systems and structures were acknowledged, often as organisational and pedagogical interfaces for both teachers and students; used for planning of lessons, assessment information, anecdotal comments and pastoral details. According to principals, this had entailed substantial new learning for some teachers.

4.4.3.2 Leveraging technological affordances

An ILE is not just the physical, not just the pedagogy; it’s the structure, it’s the digital world that overlays it as well, creating new levels of accessibility to learning, not just from within the learning centre but from at home as well.
(Peter)

This holistic view, much like that propagated by the OECD (2013), placed technology, including devices, platforms, and connectivity, as central to the learning environment: not only to maximise the learning opportunities created through contemporary pedagogical approaches but also to support effective collaboration between teachers. There was evidence of schools having spent considerable time on how best to utilise technological devices in learning. For example, principal Jason referred to the SAMR Model forwarded by Puentedura (2010), illustrating the move the use of technology from enhancement practices, (Substitution and Augmentation), into transformative practices (Modification and Redefinition), as something that he has used to “really drive some of our thinking”. In his view the model could perhaps be extended to encompass “modern learning practice” as a whole; particularly affording the capacity to do things “more efficiently, more effectively, and to maximise learning”. It also

appeared to support student agency in ILEs, such that students could demonstrate learning through several media, according to “what was best for their learning” (Dean).

For teams in ILEs what was apparent in the data was the need for effective day-to-day systems, not only to support approaches to learning for students but also as critical support systems for themselves. Principals referenced teachers’ use of online platforms such as Google Drive, to share and access learning planning. “They do all their planning on Google docs. They have their long-term plan, and underneath it, the long-term plan hyperlinked to the unit, then to the learning progressions” (Dean, principal). Frequently teacher planning was available directly to students, and in some instances to parents as well. Under previous systems, participants felt such visibility would not have been possible.

Technology provided solutions and created efficiencies, alleviating the potential administrative challenge of more significant numbers of students in ILE. Principal Brett noted that online systems assisted “collectively recording anecdotal notes, observations, and on-the-fly formative assessment which would be useful to build a picture about a child’s learning”.

4.4.3.3 Managing time

Principal Tim discussed time as presenting the most significant barrier for teachers – “Time together. Time to meet together. Time to plan together”. Similarly, participants highlighted poor time management, connected with teachers’ formally or informally meeting before, during and after school, a potential barrier to successful practice; leading to the importance of considering what teachers did together and what they did apart. The length of time teachers spent meeting appeared particularly prevalent in the early stages of spatial occupation, according to many principals. As Barry commented, “collaboration is a great thing when you’re sitting down with a group of people, and you’re planning the next day, but I’m finding myself chasing them out at six, saying, go home!” He hoped, as a result, teachers were taking less work home to do. Similarly, Principal Michael expressed concern with the time teachers took “after school every day, talking, reflecting, planning, evaluating, and having assessment conversations around what’s working for different learners”.

To Brett, temporal structures in ILEs provided a potential disconnect with responsive and authentic teaching. It appeared to relate to the “person who loved the teachable moment”, or the chance to “do something completely unplanned”. Likewise, “if you wanted to have 5 minutes to read the story for a bit longer or...spend another few minutes with that guided reading group, that was a conversation you had internally”. For Brett, this meant “in a collaborative space it’s not necessarily your decision to make...how do you work through that process?” In highlighting this concern, he drew attention to a level of individual teacher autonomy perceived to be prevalent in traditional classroom settings. For some participants, there was a concern that individual autonomy would be lost due to a requirement for collegial accountability.

4.4.3.4 Navigating spatial settings

According to Principal Brett, “We’ve never been blessed as teachers with having spaces that have been thought about from a learning point of view”. Similarly, participants highlighted factors relating specifically to how teachers might operate in the space, and the way space, and spatial affordances (Gibson, 1977) could be considered. One school leader, perhaps most engaged with spatial aspects discussed working with his staff, and interior designers, to prototype interior layouts, and furnishings. It included designating ‘purposeful spaces’ (Featherston, 2010), for activities such as cooking, construction, and gathering. Importantly for principal MA, students were generally able to remain part of the learning community throughout these activities, “we do not want to do anything that disrupts belonging”.

Other school leaders considered their teachers had developed ways of differentiating space and activity. For example, principal Jason commented, “teachers had one of the home-bases solely as the instructional room, and then they used the other two as kind of like a flow-through spaces where some group work, some independent work might be happening”. Others applied a similar logic, describing teachers’ desire to connect space and learning, linking task and place, such that, “today I’m in the art area, tomorrow I’m in the breakout room, and...I’m in the campfire because I need to have a conversation” (Dave). In his view, this came more easily to students than teachers; hence, “they use the space naturally. I don’t think teachers do that very well”.

4.5 Emerging model: Implications of teacher collaboration in ILEs

In the context of ILEs, there was a range of implications for teachers embarking on, or engaged in, working collaboratively. As outlined, implications for individual teachers; related to beliefs, attitudes, and qualities, which, beyond being a quality teacher, were perceived to be beneficial to possess, or at least work on, in order to maximise opportunities of working together in ILEs. Implications for teacher-teams; related to formation and maintenance of the team, dynamics, communication, and conflict, perceived to be instrumental components of team functionality. Practical implications pertained specifically to the day-to-day practicalities required by working collaboratively in ILEs, particularly to time, technology and organisational factors. The areas of implication are shown in Figure 4.2

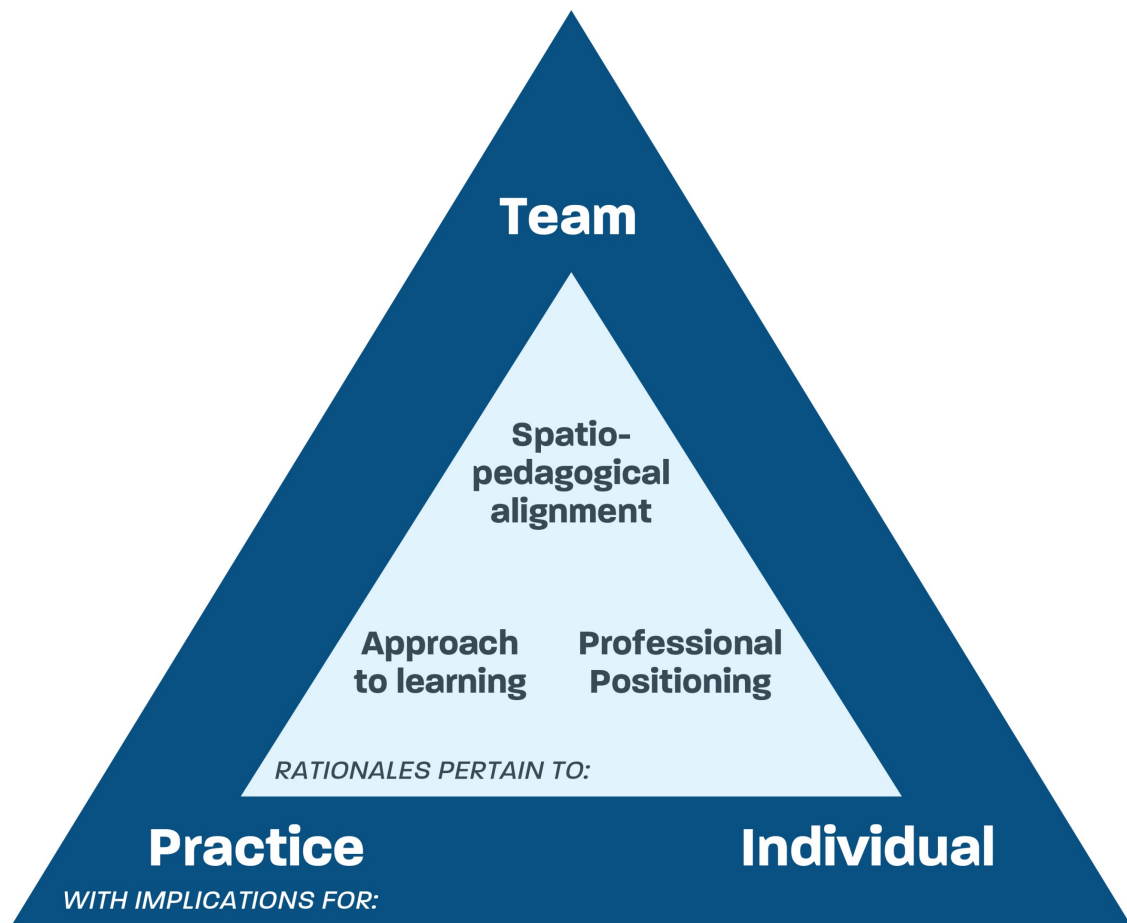


Figure 4.2. Implications of teacher collaboration in ILEs.

4.6 Conclusion

Chapter 4 has presented data and findings from Phase 1 of the study, collected through a set of ‘expert’ participant semi-structured interviews. In particular, it addressed two subsidiary research questions:

- What is the perceived rationale – pedagogically and spatially – for ILEs?
- What are the perceived implications of teacher collaboration in ILEs?

Analysis of findings gathered from ‘experts’ in Phase 1 has presented a perspective on teacher collaboration in ILEs that in part accompanies that extrapolated through the literature. It identifies rationales underpinning a move towards teacher collaboration in ILEs, as well as areas of implications.

The findings identify some of the opportunities and challenges that were associated with collaborative approaches within shared ILE. These included the conceptualisation of teacher autonomy, responsibility and accountability; the development and ongoing ‘maintenance’ of teacher teams; the nature of problem-solving; and cognitive load in a scenario where teachers regularly shared information. Spatially, characteristics formed around the role of public and private practice, impact on teacher ‘behaviour’; as well as constructs of ‘ownership’. Furthermore, constructs of teacher collaboration within ILE appeared manifold in their complexity, at a time when change was not only spatial but also often pedagogical and contextual.

The findings have also raised several issues. Firstly, in a practice sense, gauging the boundary between the work that teachers do together and the teaching they do together appears critical. The absence of reference to co-teaching methods during Phase 1 interviews is in itself revealing. Secondly, the idea of collaboration as a practice in ILEs appears multi-faceted, made more complicated through the multiplicity of aspects encompassed. On the one hand, the inference is that collaboration is commonly understood. On the other, the relationship between work done collaboratively and work done individually needs teasing out. Thirdly, is to ascertain how concepts of spatio-pedagogical alignment, pedagogical positioning, and approach to learning, are translated in practice. To that end, and in order to present a ‘thick description’ (Bryman, 2012) of the phenomenon of teacher collaboration in ILEs, it is essential to follow the theory and

‘expert’ descriptions, with a deeper dive into the field. The next chapter reports findings from six ‘snapshot’ case site explorations.

Chapter 5

Emerging enactment of teacher collaboration in ILEs – Phase 2 findings

5.1 Introduction

Chapter 5 describes findings from Phase 2, the second of three layers of progressive focusing (Parlett & Hamilton, 1976) contained in the study, aimed explicitly addressing subsidiary research question 3:

- What practices have been developed and enacted by teams currently occupying ILEs, and to what extent are they collaborative?

Phase 2 was designed to form an initial engagement with teachers ‘on the ground’. It was critical to identifying principle areas of enactment, and to understanding how teacher collaboration in ILEs was realised on a day-to-day basis. As explained in the Chapter 3, Phase 2 of the study was conducted using a series of six two-three day snapshot studies at six different sites, recommendations for which had been elicited through a process of reputational site selection (Goetz & LeCompte, 1984; LeCompte & Schensul, 2010) in the initial research phase. Each snapshot involved a suite of interviews, group interviews, observations and images to build a picture of enacted practice at each of the six sites. The six sites were located across three urban centres in New Zealand on both North and South Islands. As previously, data were analysed using an approach guided by the principles of thematic narrative analysis as developed by (Riessman, 2008).

The section therefore supports understanding of the reification of practice, shifting it from the abstract into the concrete. Here, the aim is to provide a picture of observed and ‘enacted practice’, which can then employed as a discursive springboard into a further cycle of reflection and investigation. The findings draw from all six case sites, with data from interview transcripts and field notes used to support claims. References document specific evidence or practices as appropriate.

5.1.1 Four aspects of enactment

The chapter is divided into four sections, dealing with collaboration (aspects of practice impacted by, or impacting on, the collaborative nature of practice), encountered at four interfaces in ILEs: enacted pedagogical practices, enacted spatial practices, encountered relational practices, and enacted organisational and logistical practices. This latter category emerged through the data as being pivotal to the operationalisation of practice in ILEs. Earlier analysis had amalgamated the category with those regarding pedagogical practices, but as research and writing went on, it became increasingly clear it formed a distinct category of its own. Each category is addressed in turn; the first three foregrounded with a précis of encountered practice, presented in table form, followed by a description of findings.

5.2 Enacted pedagogical practices

The first section relates specifically to activities at the interface of teachers and students related explicitly to pedagogical collaboration. Table 5.1 provides a précis of ‘what teaching looked like’ at each of the sites – a starting point for analysis.

Table 5.1. Characteristics of enacted pedagogical practices in Phase 2 sites

Site	Articulated principles	Characteristics
Hillside	• Holistic education • Personalised learning • Promotion of student agency • Humanising • Community	• Strongly evident language of learning including aspects of mindset, acceptance of challenge, support of others, learning from failure. • Complex multi-adult, ‘super-teacher’ approach attributed towards drive for personalisation. (Differentiation/ Responsiveness/) • Teacher led & opt-in workshops available for students based on needs. (Agency/ Responsiveness/ Differentiation) • Focus on shifting learning outcomes through coaching and modelling of quality practice, hence leadership team frequently engaged in teaching. • Promotion of student agency through range of ‘do’ and ‘can do’ activities. (Choice) • Co-teaching approaches provide

		differentiation and specialism (differentiation)
Cityside	• Values • Agency • Self-management • Belonging	• Core school values regularly referenced by staff and students. • Fostering (and incentivisation) of self-management promoted through language of 'independence'. • Divided curriculum responsibilities – one teacher responsible for maths for whole cohort, two for literacy. Shared responsibility for other areas. (Efficiency) • Teachers took turns at role of roaming Learning Coach (as did teacher aides)
Quarryview	• Lifelong learning • Self-direction • Partnership • Community	• Emphasis on growing 'lifelong learning' and a 'strong sense of self' with students. • Articulation of 'self-directed learners' and opportunity to... • Reference to desirable learning dispositions e.g. communication, thinking, and versatility. • Differentiated group instruction with focus on building core foundations in numeracy and literacy. • Opportunity to learn with different teachers dependent on grouping. • Strong sense of belonging and community across ILE and school. • Experimenting with...
Lakeside	• Inquiry • Self-management	• Emphasis on developing student inquiry through common approach to learning (International Baccalaureate). • Regularly referenced dispositional language of attitudes and attributes. • Targeted 'quick-fire' learning sessions.
Tidewater	• Agency • Ownership • Personalised • Differentiated • Responsive	• Strong values based approach. • Highly responsive, personalised curriculum – teacher planning is short-term and around identified needs. • Emphasis on relationships and 'partnership in learning' as key to effective learning design. Students remain with teacher for

		more than a year.
		• Students ‘design their day’ first thing in the morning, and are encouraged to take high level of ownership for learning. • Students may opt-in to learning opportunities provided by teachers and peers. • Teachers encouraged not to be teaching the whole time but to notice and respond to learners and learning.
Railway Terrace	• Project-based • Inquiry • Metacognition	• Underpinned by clearly articulated belief around optimal approach to learning. • Strongly evident language of learning across school, including aspects of mindset, acceptance of challenge, support of others, and learning from failure. • Regular reference to student metacognition. • ‘Learning through play’ demonstrated

Note. Summarised from interview, group-interview & observational data.

5.2.1.1 Shared & articulated frameworks & language for learning

Teacher knowledge and confidence with shared language frameworks acted as coalescing structures supporting work with each other, and with students. These were often articulated as key principles, developed ‘in-house’, and connected with the school’s vision or values. Alternatively, or in combination, schools had also adopted externally generated tools and frameworks in order to provide teachers and students with intent towards a common approach across the school: the use of the International Baccalaureate language of attitudes and aptitudes at *Lakeside*; Daily 5 literacy (Boushey & Moser, 2014) at *Quarryview*; SOLO taxonomy at *Cityside*, were examples. There was evidence of such language use in the case-site ILEs to a greater or lesser extent with varying degrees of articulation, visibility and overtness. Such frameworks reinforced, although did not guarantee, a more consistent approach with students. Also, the adoption of shared language frameworks connected with school beliefs, values, and desired outcomes for students appeared to provide a foundational literacy for teachers that helped to inform their decision-making activities.

For example, the tangible sense of vision at *Cityside* gave rise to a language register, which pervaded much of the work teachers undertook with students, as well as

the conversations that students had with each other. Underpinned by a set of values of ‘brilliant, belonging, beautiful, brave and bold’, they formed a terminological toolkit teachers drew on regularly in practice and conversation. So too, students seem well versed in their meaning and application. As James (Year 8) noted, “it’s not just for school, you keep the values for the rest of your life”. At *Cityside* the same terminology described a system of badges students worked towards achieving. It appeared a useful mechanism for reinforcing the values adopted by the school and supported a coherent approach. It provided a strong incentive for many students and teachers regularly referred to it during conversations with students.

5.2.1.2 *The opportunity to co-teach*

Co-teaching methods resemblant of those described in the literature (see for example Benninghof, 2012; Friend & Bursuck, 2009; Villa et al., 2008), were observed and employed to activate pedagogical differentiation. However, individual teacher capacity to describe these in detail appeared generally absent; this despite part-basing ILEs on the premise teachers will ‘teach together’, and the rationale that benefits will stem from them doing so. Identifying examples of how this was interpreted therefore became an important task. In addition, at times the choice of co-teaching strategy appeared a response driven by organisation of a large number of numbers of students rather than way of maximising pedagogical possibilities. Furthermore, observations revealed that in the majority of cases students were divided into groups and teachers remained on their own with these groups. However, teachers regularly talked about the idea of ‘teaching together’, recognising it as an opportunity for professional learning, mutual support, and leveraging teacher strengths, something they considered less likely to occur in traditional spatial settings.

- *One teach, one observe* (Friend & Bursuck, 2009), was observed at *Hillside* and employed as a means of modelling practice to colleagues.
- *Parallel* teaching (Villa et al., 2008) was observed at *Lakeside*, where two teachers split a larger group of students, covering similar content at different curriculum levels.
- Opportunities for *Alternative* teaching observed at *Hillside*, with a small group of students withdrawn to work with a teacher supporting literacy

learning; also students withdrawn individually at *Quarryview* for reading assessment tasks.

- *Station teaching* (Friend & Bursuck, 2009) observed at *Quarryview*. Students rotated around a sequence of activities with a group of teachers as part of a social studies inquiry and teachers “have ownership over one area” (Emily, Teacher).
- A *teaming* approach (Friend & Bursuck, 2009) observed at *Railway Terrace*. Two teachers set up a writing task with all students and discussed expectations, structure and assessment criteria of the task with the student group.
- *Complementary* approaches (Villa et al., 2008) were observed at *Cityside* at the start and finish points of the day, or adjacent to break times, often to set up activities, or in plenary sessions together. This approach was quite often apparent, concerned with administrative tasks, setting up students for the day, or in building community.
- Furthermore, an additional observed practice related to *Supportive* activity, often demonstrated through a teacher taking on a ‘roaming’ or ‘roving’ role (*Hillside, Cityside, Quarryview*).

What were more in evidence across the case sites were *Parallel* approaches (Villa et al., 2008) taking place, where teachers were working with small or large groups in different parts of ILEs. Sometimes this was associated with curriculum responsibility. At *Cityside*, for example, one of the teachers had responsibility for teaching groups of mathematics across the whole cohort, while two took responsibility for teaching literacy. Alternatively, it was associated with year level responsibility. At *Lakeside*, for example, three cohorts of students shared an ILE. The two, year 5 and 6 groups were taught individually or jointly by two teachers. An individual teacher taught the year 7 and 8 students. Another observed approach was in teaching determined by ‘class’ responsibility, such that teachers were engaged in similar activities with their ‘own’ class of students within a part of an ILE (*Quarryview*).

Although taking place simultaneously in ILEs, some examples of *Parallel* practice appeared closely akin to separate classrooms of students working with separate teachers. Standard practice in traditional classrooms, mainly when teaching small groups, in turn, is the use of a ‘tumble’ of activities, through which students rotate from

learning with the teacher, engaging in ‘follow up’ learning, and then through a set of independent tasks. Similarly, where teachers were teaching on their own in co-located ILEs, there was evidence of this approach in action. A modification of this occurred when a pair or more of teachers regrouped two student groups according to particular criteria and then operated parallel ‘tumbles’ of activities. As Emily (*Quarryview*) noted:

For reading at the moment, they’re with their main teacher. But next term what we found is I’ve got four children that are working on inferring, and Fiona’s got six, and we’re teaching them separately at the moment. So I said to her well next term one of us will take that group which frees the other one up to teach other groups.

5.2.1.3 The role of ‘roaming’ teachers

Frequently within ILEs, while teachers taught small groups, a colleague teacher moved between students. This practice was often referred to as ‘roaming’ or ‘roving’, and was associated with providing opportunity to address individual learning needs as they arose, as well as ensure students were ‘on task’. For Wade (Year 8, *Cityside*), “It’s really good because all the time there’s a teacher roaming in our block. So you can always ask for help”. Where the role of ‘roaming’ teachers appeared to be most useful was in situations where the role was clearly articulated and understood by teachers and students alike. More sophisticated interpretations included booking systems for mobile teachers. At *Cityside* the practice had also been adopted to enable teachers to teach small groups without disturbance. Here, the role of the ‘roaming teacher’ constituted a more formalised ‘Learning Coach’ role that teachers (and teacher aides when not working alongside their own set of target students), took turns to carry out. The team timetable, displayed publicly in the central area, detailed which teacher would be in a mobile, Learning Coach role during any one session. The role came with task requirements: a ‘target list’ of students to check in with during the teaching time, and opportunity for students to request additional support with something. Students recorded details on a shared whiteboard, dubbed the, ‘Come and find me wall’, under the name of the teacher or teacher aide from whom they wanted specific support. At *Cityside* the expectation was established and reinforced that for students learning independently and requiring support, they would talk to the Learning Coach, and not those engaged with group teaching. Students demonstrated a strong fluency with the concept. As Wade

noted, “she’s teaching a group, and her priority is the group”. Even when sitting close to a teacher and requiring support, students waited to talk to the Learning Coach. They felt reassured that when working with a teacher, attention would be towards them, and that, when not with a teacher, there would be someone ‘on hand’ to support them.

5.2.1.4 Opting in (or out)

As opposed to co-teaching models explained in the literature, which often emphasised the role of the teacher in curriculum delivery, approaches developed by teacher-teams frequently emphasised student choice and agency. The emergence of practices such as the provision of ‘workshops’ that students could opt into, and in some cases create, or co-construct with teachers, exemplified modifications to co-teaching approaches. The idea of ‘opting in’ to workshops and learning opportunities appeared one way of affording choice and agency to students. Also, it enabled teachers to play to their strengths and provided opportunity for specialism. More sophisticated interpretations connected the practice with collectively determined goals and needs, requiring considerable discussion to determine the allocation of teacher time and resource.

A method adopted by teachers at *Hillside*, although broadly in keeping with a *Parallel* teaching approach, was related to offering a range of ‘opt-in workshops’. Often these were in response to a need determined by the teaching team, illuminated through observation and data analysis. Labelled ‘*Snappers*’ and ‘*Workshops*’, teachers considered them a responsive pedagogical practice and good use of multiple teachers’ time. They also considered that the approach contributed towards build students’ assessment literacy and decision-making.

Interestingly, the idea of choice was often replicated and emphasised through student voice; generally in the day-to-day sense, and related to ‘having alternatives’. The reduction in ‘wasted time’ was often referred to when discussing learning with multiple teachers. On further analysis, however, it emerged what students valued was the availability of alternatives. As Amy (Year 7, *Cityside*) commented, “if your teacher is busy with something then you can always ask another teacher, whereas if you just had one teacher in one classroom and they’re helping someone else, then you’re kind of stuck”. Most immediately students emphasised the relative efficiencies of having more than one adult available to them, relating this increased access to human resource in

terms of it being a precious commodity; “two teachers are great because we can learn more. We get to have twice as many workshops, which means more learning” (Lily, Year 6, *Tidewater*).

Additionally opportunities were perceived in the broadening of pedagogically and relationally diverse opportunities. Students regularly highlighted pedagogical differences between teachers, determining that this was directly beneficial for their learning. They referred to an appreciation that teachers had different curriculum strengths and therefore provided them with a broader range of expertise to draw upon. For example, Paige at *Hillside*, in a reasonably indicative comment, noted, “I get different skill-sets out of all the teachers”. In addition, students had a belief that different teachers would employ a range of teaching strategies between them. As Oscar in the focus group at *Hillside* revealed, “they explain things a bit differently”, which he explained helped him in his learning.

5.2.1.5 Students as ‘teachers’

The idea of students designing and delivering their own ‘workshops’ appeared a significant potential means for students to demonstrate learning, agency and self-management; and formed an interesting adjunct in the co-teaching spectrum. ‘Students as teachers’ were mainly observed at *Tidewater*, where an espoused intention was in fostering high levels of student agency. At *Tidewater*, there was an expectation that students would not only support others in areas they were good at, but would see this as a legitimate avenue through which to demonstrate their learning, share skills, and help others to learn. Students viewed this as a purposeful outcome of their learning. Providing them with regular opportunities to lead workshops was observed to extend the idea of the learning community, broadening it, and in doing so genuinely valuing student’s contributions. Besides, students saw themselves as co-teachers, discussing the focus of their workshops, and reflecting on the process of designing and leading. Additionally, students demonstrated a high degree of spatial literacy, making decisions about where best to hold their workshops.

5.3 Enacted organisational & logistical practices

The second section reports enacted *organisational or logistical practices* related to teacher collaboration. Although initially incorporated into the category on *teaching*

practice it became increasingly clear organisational and logistical requirements merited specific attention. Especially for teachers in early stages of ILE occupation, these formed significant areas of concern, and requirements for adaptation; compounded and made complex by the number of people involved. Table 5.2 presents an initial précis of ‘what organisation and logistics looked like’ at each of the sites, and forms a starting point for analysis.

Table 5.2. Characteristics of organisational and logistical practices in Phase 2 sites

Site	Characteristics
Hillside	Students observed belonged to multiple groups (& teachers): Mathematics, Literacy, and ‘Whanau’ group (across school ‘family’ type grouping). Online Learning Management System specifically designed to support assessment and learning. Language usage applied to levels of independence including associated ‘spatial freedom’.
Cityside	Divided curriculum responsibilities – one teacher responsible for maths for whole cohort, two for literacy. Shared responsibility for other areas. Teachers took turns at role of roaming ‘Learning Coach’. Language usage applied to levels of independence including associated ‘spatial freedom’.
Quarryview	Teachers have ‘home group’ of students. Students often remain with teacher for reading activities but may learn with another teacher in studio for mathematics or writing.
Lakeside	Teachers have ‘home group’ of students, and occupy specific areas within ILE. Two teachers work with Year 5&6, one teacher with Year 7&8. Some cross grouping in Year 5&6
Tidewater	Responsive team-teaching approach with daily schedule built around students, with students. Opt-in workshops available for students based on needs. Teachers collectively responsible for whole cohort but with a ‘tag group’ of students.
Railway Terrace	Considered students to be ‘our class’ but had divided the teaching. The division meant that one was primarily responsible for all mathematics learning (conducted in the mornings) and the other for all literacy (in the afternoons). Teachers were responsible for all planning, assessment and reporting that were related to their subject area.

Note. Summarised from interview, group-interview & observational data.

5.3.1.1 Signalling & signposting: Shared protocols, routines & materials

The requirement for shared approaches was noticeable, not only in the use of language and frameworks for learning but also in association with materials, resources and routines. Establishment and maintenance of these routines of practice helped to foster expectations. Moreover, where there was consistency; students appeared to exhibit fluency and familiarity with where materials belonged, where they could find things, and where to put things when tidying away. Experienced teachers in the study emphasised that the need for such routines went over and above that required in a traditional ‘sole charge’ classroom and were often needing to be established for seemingly minor undertakings. For instance, fundamental ‘classroom’ management tasks such as asking students to stop what they are doing and listen to instructions became more complicated with more students, some of whom were unsighted. Where recognised, teachers used similar phrasing for instructions, and on behalf of less proximal colleagues, intervened with individuals or groups of students (particularly those occupying breakout spaces), to reinforce shared expectations. The *Quarryview* team were the only ones observed to employ the use of an inbuilt sound system from time to time to assist in sharing notices and giving instructions to the whole cohort of students. At *Lakeside*, one of the teachers employed the use of a small bell to signal her ‘class’ to listen. For one early-career teacher in particular, tasks like this that involved talking to the whole cohort of students were approached with some trepidation. It was, as Fiona reflected, “really hard” (Fiona, *Quarryview*).

Additionally, practices of material organisation, distribution, collation, and collection created implications for teachers in collaborative situations; often related to whether or not items were ‘owned’ or used by one teacher, or shared across the team. Decisions pertained to the storage (and care) of regularly accessed resources, books, and digital devices. These extended to artifacts of student learning, assessment, and record keeping; also to aspects such as the creation of wall displays. Examples included:

- Labelling systems for equipment on drawers or shelves (*Railway Terrace*, *Quarryview*);
- Centralising storage of art supplies, levelled reading books, mathematics equipment, and literacy materials, so that everyone in the ILE accessed them from the same place. At *Railway Terrace* individual students were observed

to collect necessary resources and put them out on tables ready for their peers to join them;

- At *Quarryview* particular tables were associated with particular materials during Daily 5 literacy;

Also, storage for students' belongings was a consideration (often in contrast to students having a desk of belongings in previous spatial models). Some of the practices adopted in ILEs included:

- Individual storage containers for students personal equipment such as filing boxes (*Quarryview*), tote trays (*Cityside*);
- Communally shared containers of pencils, pens, scissors, and stationery items;
- Central storage for students' exercise books (*Tidewater*), or boxes allocated according to 'groups' (*Quarryview*). At some sites, the requirement for students to have lots of exercise books was minimised. At *Railway Terrace*, for example, students only used one at a time;

Where a shared language of learning and routine was evident, this was generally referenced through wall displays, providing reference points for students and teachers. Wall displays were frequently functional. In particular, many documented students' current goals or process of learning. Practices were also in place to enable students to record when they were out of the ILE and where they were, for example, learning in the library, staff area, or kitchen, or attending music and ESOL lessons (observed at *Tidewater*, *Cityside*).

5.3.1.2 Approaches to grouping and accountability

In schools, a role traditionally performed by grouping students into classrooms is in locating professional accountability with a specific teacher; specifically concerning teaching, assessment, reporting and communication with parents, and pastoral requirements. One challenge articulated by teachers when moving into ILEs was in determining who would perform these various functions.

Furthermore, within classes, further sub-grouping of students is a commonly occurring practice. Grouping for learning is often associated with practices of differentiation, constructed around relative curriculum levels, interests or needs. In a

traditional classroom-based environment, this would generally be self-contained and carried out by one teacher, but in an ILE, this may not be the case. A common concern raised by teachers was that children might ‘fall through the gaps’ in circumstances where one teacher lacked the ‘whole view’ of a particular child. Similarly, some teachers were concerned that the quality of learning relationships with students might become diluted by the experience of working with multiple adults. These two components, grouping and accountability, surfaced as closely linked factors. Their navigation and resolution was foundational to approach setting and subsequent enactment. Determining general approaches to grouping, therefore, appeared pivotal to subsequent ways of operationalising pedagogical approaches.

The team at *Cityside*, for example, acknowledged at the start of the year they had worked more closely with their own student home-group. They had modified their approach as they felt the students were more ready, reflecting a desire to grow student agency and choice, as well as provide specialisation opportunities for teachers.

Some ILE teams had intentionally set out to leverage from the number of available teachers, such that students were designated to work with for particular curriculum subjects; mainly observed at *Hillside*, *Cityside* and *Railway Terrace*. In other sites, students predominantly worked with one teacher, with some opportunities to work with others (observed at *Quarryview* and *Lakeside*). An alternative approach observed at *Tidewater*, meant that learning opportunities were regulated less by predetermined grouping structures, and more by student choice and selection. Here the co-location of multiple teachers was viewed as an opportunity to amplify student-adult learning relationships (more akin to a learning community), and hence seen by teachers as a decisive factor. While teachers acknowledged that they retained a ‘tag list’ of students to help monitor, it was intended, (and observed), that students learned with all teachers. Learning workshops were advertised according to content and run by either of the teachers. Students were then able to opt into these workshops or choose to continue with other activities. Across the sites, students were always allocated into a specific teachers’ administrative grouping of some kind or other.

Where ILE teams operated fluid approaches to grouping, increasing the likelihood of learning alongside multiple teachers, the onus was on teachers to develop a parallel form of tracking. As teacher Ulrika noted at *Cityside*, “it’s more flexible, and

kids can fluidly move where they need to go, it means we've had to up the ante a lot on tracking". Much of this occurred in team meetings, sometimes dedicated explicitly to tracking conversations, often supplemented by online data collection formats.

5.3.1.3 Approaches to time

Attention to the temporal nature of teaching and learning in ILEs emerged as significant; teams often reflected how much time they spent talking about time. As an implication for teacher-teams, therefore, determining the use of teaching time appeared a critical decisional focus. It also presented something of a conundrum to be navigated by teachers, especially in light of intentions surrounding concepts of agency and responsiveness, each suggestive of fluidity and reduced temporal constraint. As stated previously, teacher teams adopted several variations of co-teaching and grouping students as part of their pedagogical approach. These often determined who was teaching and learning with whom, when, for how long, and with what frequency. As such, teams dedicated time to coordination, and sometimes-extensive negotiation (observed in team meetings), which appeared heightened when there was a break in routine.

The case-site schools each worked inside parameters of a 'regular school day' (approximately from 9 am-3 pm), with breaks mid-morning, and at lunchtime. In running their ILEs, teams generally adhered to a timetable of some sort. Often this was displayed on a whiteboard or screen (and often online), and available for students to see on entry.

Noticeable during observations was the adoption of 'unprogrammed time' (often a half-hour or hour block), during which students could engage in exercising some task-choice. This corresponded closely with interpretations of 'self-management', or 'self-direction' in learning. In some contexts, this meant students worked through a set of 'must-do', and 'can-do' activities, made available online, or via a worksheet. Students were allocated time during the week to complete the tasks. At *Cityside*, for example, students were provided with the sheet on Monday morning with an expectation the tasks (each allocated points), would be completed by Friday. For Isabella (Year 7), this meant, "you have to have good time management to make sure you get all your learning finished".

An exception to commonly encountered temporal practices was at *Tidewater*. Here, students planned their day on arrival to school; something that many were engaged in up to half an hour before school started, indicating a running start to the learning day. In addition to ‘programmed learning’ there were also frequent opportunities for students to engage in working on ongoing and longer-term ‘immersion projects’, either alone, with a peer, or in a small group. Much of the emphasis on learning was around these projects. Consequently, there was a sense that students were ‘stepping away’ from these projects temporarily to attend targeted literacy and numeracy sessions – a contrast to requirements to follow a more prescriptive approach when away from teachers.

5.3.1.4 Incorporation of digital environment

As teachers adopted increasingly sophisticated approaches to grouping, enabling choice of the learning pathway, and shifting the locus of control, there was a parallel requirement for increasingly sophisticated digital systems (confidence with, and literacy of) to support teachers’ overview and accountability.

Although teachers often associated ILEs with physical space, the parallel navigation of synchronous digital space was equally significant, and for some, more immediate import. In particular, online tools played a substantial role in creating efficiencies for teachers, especially when they shared responsibility for individual students’ learning with colleagues, and across a broader cohort of students. Such documentation often included tracking of learning and student progress, ongoing sharing of planning and documentation, timetabling, and coordination of teaching sessions. At *Cityside*, for example, teachers shared planning with each other, contributed to ongoing anecdotal student assessment information, and kept shared meeting minutes through the use of shared Google docs. The team considered this instrumental in facilitating the administration of the collaborative teamwork, and as a pragmatic response to sharing workload and documents. Additionally, some teams were locating teacher planning along with relevant digital learning objects (e.g. video, slides, and websites), online, ensuring accessibility for students at school and home (*Tidewater, Lakeside*).

For teachers at *Tidewater*, the shared website formed the portal for teachers and students into the daily planning and arrangement of student grouping for workshops and

activities. The portal also served as a repository of teaching resources so that teachers could draw on colleagues previous planning and materials. As part of individualised daily planning, students co-constructed the available workshops alongside teachers, populating the daily Google planning document as they did so.

The adoption of online platforms helped to support the realisation of pedagogical objectives, without which teachers considered unmanageable. In particular, for schools offering personalised approaches to learning, as well as those fostering elements of student self-direction and self-management, access to online environments appeared a necessity. Development of online systems that support these objectives, enabling effective aggregation, viewing, and differentiation were in development in one of the schools. The provision of a propriety learning management system at *Hillside* enabling curation and analysis of student learning and needs, although time-consuming and complex to deliver, was seen to go some way to supporting this vision. The system enabled students to upload evidence of their learning, against a range of learning outcomes, organised along a progression of learning in several curriculum areas. Teachers, in discussion with students then acted to moderate the evidence against the outcome criteria, and in doing so signalled whether the goal had been achieved (turning a button green in the process). One of the intended inbuilt efficiencies was that the access to a broader gamut of student information prompted teachers to construct responsive workshops based on student requirements. As Ulrika explained, “we wanted was something that was much more evidence-based, so we could show where each kid is, so it’s not a gut feel from teacher to teacher”.

In so doing the software was considered by teachers to produce greater consistency between their understandings of an individual student’s next learning steps. In one respect, as DP Ulrika noted it had helped, “show us all as teachers actually what we need to teach” in terms of curriculum content. Additionally, it enabled the teacher team to aggregate the information and undergo a regular and systematic ‘gap-analysis’ in order to highlight the potential for more targeted groupings. Furthermore, teachers and leaders viewed the tool as a vital moderation instrument used in describing and reporting individual student’s progress, mainly when communicating to parents.

5.4 Enacted spatial practices

The third category of findings emerged around the way teacher teams utilised space and spatial opportunities provided by their ILEs. *Spatial practices* describe the observable and discernable approaches to spatial utilisation developed or adopted by teams in their ILEs.

Table 5.3 presents an initial précis of ‘what space and spatial usage looked like’ at each of the sites, and forms a starting point for analysis.

Table 5.3. Characteristics of space and spatial usage in Phase 2 sites

Site	Description of ILE	Characteristics of spatial approach
Hillside	Double classroom ILE space with adjoining ‘corridor’ and breakout space with vinyl wet area and sink. Adjacent teacher workroom as well as proximal library, staff areas and meeting room available for student use. Minimally furnished.	Flexible use of ILE dependent on activity. Some teaching in large/ small groups. Students used to high level of choice when on independent tasks (although some restrictions on students according to perceived level of independence). Teacher workroom available but not used to be used by teachers during observations.
Cityside	Cluster of rooms around central corridor, each with designated usage: teaching, group, peer, and quiet. Purposeful furniture in each space. Central teacher workroom.	Spaces strongly associated with usage. Students enabled to learn in spaces depending on perceived level of self-management demonstrated. Teacher workroom well utilised during the day.
Quarryview	Two adjacent studios, each comprising a main space, closable wet area, & 2 breakout spaces. Also central shared breakout and teacher office	Teachers each occupy specific areas within ILE, based at individual teaching stations.
Lakeside	Central area and 5 ‘breakout’ rooms: Art/ science, performance, collaborative, individual, resource	Teachers based at individual teaching station. Approach to furniture and space very clearly articulated throughout ILE.

Tidewater	Central area including wet space. Also three 'breakout' spaces: one larger, and two smaller Also semi-open teacher workspace, which is available for student use.	Flexible use of ILE dependent on activity. Students used to high level of choice when on independent tasks. Teacher workroom regularly used by students during the day. Teachers operated from tall table adjacent to meeting space.
Railway Terrace	Double sized relocatable classroom with small breakout room off the linking entrance area	One room designated as 'teaching' space, primarily used for mathematics/ literacy. Second room used for project & 'play based' learning.

Note. Summarised from interview, group-interview & observational data.

5.4.1.1 Definition & designation of space

The extent to which teachers designated space for specific activities formed a discernable feature in case-site ILEs, reflecting whether there was consideration given towards the pedagogical relationship between available space and desired activity; sometimes it manifested as an extension of shared language.

Shared spatial language was most apparent at *Lakeside*, where colour-coded rooms relating to activity (art, collaboration, individual, performance and resource), were positioned along two sides of the main learning space. In an ILE, where two programmes ran simultaneously, the collective understanding of how spaces were used, along with expectations in terms of noise levels and size of student grouping in each of them, was an essential factor in ensuring it ran smoothly. Explained as 'flexible' spaces by one of the teachers, they were perhaps alternatively better described as 'purposeful spaces' (Featherston, 2010), where spatial design and furniture settings indicated and reflected task suitability. The work that the team of teachers had engaged in, particularly early in the school year, was evident in the level of collective reinforcement, spatial literacy, and ownership demonstrated by students. In this way, the school seem to have achieved a degree of pedagogical flexibility through providing a variety of quite specialised spaces.

It kind of really depends on what you want to do. Let's say for your reading work you want to paint a picture, you would go to the green room, the creative space. Or if you wanted to work collaboratively together in a group, you go to

the orange room. And if you really just want to work by yourself to get stuff done you go to the red room, the independent room (Lewis, Year 7).

At *Railway Terrace*, spatial settings within the Year 3 and 4 ILE separated what teachers described as teacher-focused end and student-focused approaches. This designation of space, along with division of curriculum, meant that one teacher focused on literacy groups in the morning (utilising the ‘teacher end’) with a swap occurring midday so the other teacher could run mathematics in the afternoon. As teacher Kim explained, “We wanted to set it up so that what went on in here was very structured, and it was very maths and literacy orientated, and what went in there obviously was a child-centred, topic-based, small groups, different activities”. Here, collaboration was associated with spatial differentiation, enabling teachers to exercise flexibility in the type of activity they designed.

For teacher Cathy, teaching literacy, the approach enabled her to work with the entire cohort of students, providing differentiated levelled tasks according to needs. When not with her, students worked on individual and pair tasks that prepared for, or followed up from the lesson. In the student-led end of the ILE, Kim, along with the students, set up a range of learning centres (Villa et al., 2008) that included a variety of visual art, construction, and music-based tasks. This approach reinforced pedagogical principles promoted at the school where deliberate practice, and also experiential ‘learning through play’ were valued.

Designation and reinforcement seemed to increase the likelihood that particular spaces were utilised as initially intended. It appeared to make it easier for teachers to talk to students about expectations, as these could be spatialised (and communalised), rather than personalised. Hence ‘these are the expectations of the space’, as opposed to ‘these are my expectations’ (when another teacher’s expectations might be different). In doing so, such a strategy perhaps invited students into a relationship with space, and helping to develop a critical spatial literacy, and building understandings of how space might support students in their learning.

5.4.1.2 *Relative ‘ownership’ of space (individual / team) responsibility*

The transition from the relatively private realm of individually ‘owned’ classrooms to shared space prompted a significant shift in thinking and practice, yet it

was apparent that there was still sometimes a tendency for teachers to occupy specific parts of the ILE. Often this was in conjunction with the approach towards sub-grouping. Where teams had designated administrative groups they were responsible it seemed more likely they had a home base designated as theirs. To an extent this appeared to indicate a degree of permanence of position, perpetuating the idea of an individually owned 'pseudo-classroom' within ILEs. Therefore, where teachers had permanent 'stations' in ILEs, there was a stronger sense of individual ownership of space, often connected with 'ownership' of a more traditional 'class' size group of students, as opposed to collective responsibility for the whole.

At *Hillside*, the principal's assertion that "we definitely do not want teachers to own a space" (Leanne), was built on the perception that teacher ownership of space would place limitations on students. 'Openness', a strong belief at *Hillside*, meant anyone was able to teach or learn anywhere across the school campus. Correspondingly, students could often work in multiple areas of the school in addition to the ILEs; some, spaces like the staffroom, boardroom, and teacher workroom, were noted as being spaces more traditionally associated with adult 'ownership'. The principal considered 'openness' to be a factor impacting on the way teachers worked. In her opinion, the lack of individually 'owned' space within the ILEs increased the likelihood of teachers being mobile. The principal judged this as congruent with a pedagogical intention for a flexible and fluid approach, and one, which remained responsive to the needs of students.

At a micro-level teachers associated 'ownership' with having a desk, and more often in terms of "where am I going to put my things" (Gillian, *Quarryview*), than as an artefact symbolic of power and position (all teachers except those at *Railway Terrace* had a shared office space to store personal items). Although the absence of a desk was associated with not defaulting into didactic practice, teachers at *Quarryview* were each based at a 'teaching station', which in turn ostensibly served a similar purpose (similarly observed at *Lakeside*).

Teachers at *Tidewater* noted that they did not have designated areas in the ILE for individual teachers. Instead, the intention was what teachers described as a "fluid" (Rebecca) approach, where they were able to decide where they would work at the time. Acknowledgement from Rebecca that "we don't ever plan it", and Ryan that, "it kind of

just happens doesn't it?" indicated a level of spontaneity and responsiveness that echoed the pedagogical intention evident within the school. Finding a place that was fit for purpose at the time indicated a capacity for teachers to fit in with each other. It was also an opportunity to invite students to select where a group would learn, supporting the building of their critical spatial literacy. However teachers did reflect the ease with which they could currently do this, and considered that it might become more difficult as they grew in student and teacher numbers.

5.4.1.3 Opportunities for student access in ILEs

Students were often able to locate or refer to preferred spaces for learning. Provided with an opportunity to self-select spatial settings, students expressed preferences as to where they selected to situate themselves, apparently assimilating this new knowledge quickly on the occupation of new ILEs, and exhibiting levels of self-awareness. Sometimes this was task-oriented, at other times social. Helen's comment is indicative of many students' in revealing a sophisticated level of self-awareness:

I work in different places depending on what it is that I'm doing. If I'm doing the same task as one of my friends, I'll probably sit with them, and we'll help each other. If I've got a reading task and I've got to read something, I'll sit by myself, so I don't get distracted (Helen, Year 5, *Hillside*)

Students not only made use of provided furniture and settings but also often moved furniture to best suit their purpose, using it as designed, or for different purposes. Soft ottoman seats regularly functioned as laptop stands; benches as things to sit under; stools moved to lean against a wall. Noticeably students also made use of the spaces in-between, either by appropriating furniture, floor and wall space to create discrete, and temporary learning enclosures and settings. Reminiscent of descriptions and images of informal settlements in urban landscapes (Dovey & King, 2011), students often sat up against walls, under tables, and behind soft furnishings or shelving units.

Given the larger scale of ILEs in comparison with a traditionally sized classroom space, one factor that became apparent concerned students' relative access to areas within ILEs. Teachers sometimes articulated this as commensurate with levels of perceived capacity for self-management, the implication being that not all students were afforded the same spatial freedom or opportunity for mobility. In some cases this was

determined and mediated through spatially referenced structures, allowing or limiting access accordingly. It also appeared to be a feature that teachers could choose, or not to exercise degrees of control over.

At *Hillside*, accessibility to spaces was directly connected with levels of perceived student self-direction and mediated through a structure of *I-Groups* that incorporated increasing geographical range. The *I-Group* that students were in determined where they were able to go. Termed *Introducing*, *Initiative*, *Independent* and *Insider*, with names displayed on a wall in the ILE, students were aware that those on the right-hand end of the continuum enjoyed, “a bigger variety of places to work” (Helen, Year 5). As they understood it, “the teachers trust so you, so you don’t have to stay down here” (Paris, Year 5), where ‘down here’ represented the ILE. Students acknowledged that there were several criteria to be met in order to be an Insider and that with it came privileges. The terminology attributed towards being an Insider stemmed from a broader conceptualisation across the school of self-awareness, agency and belonging.

At *Cityside*, individual students’ opportunity to use the different spaces in the hub related directly to a perceived measure of self-management. This was mediated through the ‘Independence Wall’ and applied the language of SOLO (Structure of Observed Learning Outcomes) taxonomy of learning (Biggs & Collis, 1982) to levels of individual independence. Used primarily across the school as a meta-cognitive framework to describe levels of understanding, teachers in the community had adapted it to this context. Students’ positioning on the display board contributed directly to their levels of permissible spatial access; the further to the right their photograph was placed on the display, the broader the range of spaces accessible to them. Accordingly, students either remained in their ‘home-room’, could work nearby, or away from direct supervision; some had the freedom to work anywhere in the school. During one observation two students moved a small table into the broader central corridor to work on together. On noticing, the Learning Coach asked them to move it into the designated quiet space instead. Subsequent questioning explained that only one of the students was able to select to learn in any part of the community; hence they had been asked to move. Teachers acknowledged that opportunities for spatial independence, when consistently implemented and maintained, provided a level of incentivisation for many students. It

also acted as a means of control for teachers, who retained the capacity to limit students' relative freedom.

Therefore it was understood in some situations, limitation of student access to areas with the ILE or school was placed out of a need to build trust, set expectations, and offer incentives to students. In some examples, it was linked to engendering levels of self-management within students. In creating a structure such as this, it was clear that ongoing monitoring was required. The unintended outcome was where spatial agency was conflated with self-management, meaning some students who may have responded well to specific learning settings and spaces were not necessarily entitled to an opportunity to use them.

5.5 Encountered relational practices

The fourth category of findings emerged as a result of the analysis of teacher voice regarding ongoing pedagogical, organisational and spatial practices, and perhaps should be subtitled 'navigating the 'arranged marriage'; about noticeable phenomena occurring between teachers. These phenomena resulted from changes to the frequency, the intensity of, and control over, interactions with colleagues. As a point of enactment, this is where teachers appeared to harbour most concerns, and frequently reflected that their previous environments had ostensibly mediated levels of inter-relationships between teachers.

5.5.1.1 Dialogue, dissonance & negotiation "We're always talking": Planned and unplanned dialogue

The nature, duration and regularity of discussion that occurred between teachers (before, during, and after school) formed an observable phenomenon of collaborative work within the majority of case site ILEs. Although teams reported predetermined and calendared times for regular after-school meetings, of the observed teacher exchanges only the minority appeared pre-planned. More common were the myriad exchanges in passing, the seeking of information from one another, and the ongoing serialised dialogue – picking up and continuing conversations from earlier. Broadly speaking these interchanges took place between pairs of teachers, with conversation content related to administrative matters, sharing of resources, comments about individual children, or occasionally more personal sharing and collegial exchanges. For Kim at

Railway Terrace, this highlighted a distinct difference between working in an ILE, and previously, in her traditional classroom. As Kim at *Railway Terrace* commented, “it can vary on how much time we talk after school, but we’re always talking... about the kids and debriefing about things”, referring to the need to be regularly conferring with colleagues. Ryan, at *Tidewater*, referred to “noticing aloud”, as ongoing verbalisation to colleagues. Accordingly, this practice resulted in making ‘public’ artifacts of knowledge or observation that under previous spatial circumstances would remain internalised and unspoken (a practice that some teachers viewed as a source of particular cognitive load). It highlighted a distinction between teacher talk as planned and formalised versus that as unplanned and informal.

Asked about the work they did together, teachers regularly articulated the need to meet together as a team. Scheduled meetings were not a new practice for teams of teachers, but in working collaboratively in ILEs, they took on new significance, especially when sharing responsibility for a broader cohort of students. Meeting tasks often involved administration, discussing routines, referring to individual students’ needs, planning learning experiences, and reflecting on current practices. Teachers at *Quarryview* reported the necessity for extended meeting times; especially initially, developing and refining new joint systems and structures. Although considered essential and inevitable they were also seen as unsustainable and “exhausting” (Julie, Principal, *Lakeside*).

Confirming the view of their principal (reported in Chapter 5), Gillian (*Quarryview*), also noted that this process had sped up, “we used to be having conversations for two or three hours after school”. Since then, they had developed ways to abbreviate these meetings or to do without them entirely, specifically by taking a more rigid approach towards their content, structure, and time.

Teams employed different strategies for meeting. Formalisation through agendas or time restrictions emerged as beneficial with teams sometimes splitting meetings into specific purposes. As an example, the team at *Quarryview* had specified a Wednesday afternoon for a team meeting (mainly administrative), and Thursday for planning the following week’s programme. They had also trialled a short, 8.15 am stand-up meeting to run through the day’s schedule in advance although after a while had decided this was surplus to requirements. Within each of the meetings was an emerging internal

protocol that assisted in keeping the discussion on track. While this acted as a self-regulatory tool, keeping the team to account, there was a sense among teachers that quality reflection and depth of thinking might get lost in the process. As a consequence, some teachers felt that time restrictions sometimes hampered the “creativity of thinking that happens when you start talking” (teacher, Suzanne) and the opportunity to dialogue in-depth about new pedagogical approaches.

Unplanned cross-team conversations frequently took place before, during and after teaching sessions; often observed to revolve around the negotiation of time, information swapping, clarification of organisational requirements, and in-the-moment decision-making or coordination, possibly as a result of external factors such as rain, interruptions, changes to the timetable, or availability of space. Although impromptu some evolved into ‘pseudo-meetings’: the phenomenon of a quick conversation turning into something much more in-depth involving discussion and decision-making. The emergence of the ‘pseudo-meeting’ highlighted a contention between joint and individual work and how time became contested in collaborative situations. Although not intentionally exclusive, teachers noted these could often occur at the end of the day, at times when others had left the school (teams were sometimes contending with individual teacher’s requirements to leave early after school, in particular for personal reasons or child-care arrangements), which would potentially have a broader impact for the whole team. For Amanda at *Hillside*, commenting on a similar phenomenon, the challenge was in the intensity of discussions and conversation. Her comment that “I find it hard to stay at a deep level all the time” was in response to a perceived expectation of continual growth and reflection at the school.

Notably, this comment linked to the reference of shared teacher workspace; with the inference spatial proximity and inherent visibility of colleagues in an open space, or shared office was often perceived to be associated with availability. Although students at *Hillside* sometimes displayed ‘do not disturb’ type signs when wanting to work quietly alone, teachers often found a parallel practice challenging. Amanda found this difficult: “You might be doing work, and you might ask a question, and it develops into this big thing and...there’s an hour gone...and sometimes I just need to get things done”.

Some schools had adopted structures of teacher release time in order to enable teachers to meet together more efficiently. As Leanne, principal of *Hillside* stated, “I reckon schools are going to have to look at ways to provide time”. Consequently, she allocated a day a week for teams to meet together. Of this time a portion was allocated to whole school matters and the rest of the time to ‘hub’ meetings.

Alternatively, at *Cityside*, where students were engaged in technology and arts with specialist teachers, teachers enjoyed release time together in which to plan, and discuss priority learners. Connected with their Classroom Release Time (CRT) it amounted to an 11.30 am to 2.45 pm period each week. For teachers at *Railway Terrace*, their Classroom Release Time coincided three times a terms, which allowed them to work on tasks together.⁴

5.5.1.2 “Working collaboratively is constant negotiation”

Data from teacher group interviews showed a conceptual cluster relating to interpersonal aspects of negotiation, consensus reaching, compromise, and decision-making, the requirement for which became emphasised in ILEs. The idea of ongoing, negotiation, ideation, exchange, compromise and acquiescence, appeared to form an area of considerable personal and professional learning for many teachers. It was a significant component of collaborative practice in which teachers needed to develop comfort.

Lisa for example, at *Hillside*, spoke of being in a position to take an idea from initial thinking through to fruition with students. Instead, when working collaboratively, she felt she needed to “hold my ideas lightly”. For teachers at *Railway Terrace*, the need to compromise when working in an ILE meant “being able to share each other’s values”, “being able to give each other flexibility” (Kim) and being able to “explain our position” (Kim) despite possibly holding a “different philosophy” to one another. Furthermore, there was a recognition that teachers may have to abandon familiar practices and develop something different for their new context. To one of the teachers, this appeared to have caused a challenge. During an observation she ran a ‘news programme’ session with a large group of student, something she considered “very pivotal to the way I teach” that “wasn’t negotiable”. They had built the programme into

⁴ In addition to this teachers described as Provisionally Registered Teachers (PRTs), in the first two years of their career would be allocated an additional day (year one) or half day (year two) of release.

the weekly timetable despite her admission that “in the beginning, they can have mum prepare it” (something that was evident during the observation). For Kim this was an example of compromise, exemplifying one of a “few hiccups” on the way.

5.5.1.3 Conflict & the art of pre-empting problems

Teachers held a collective awareness of the impact inter-personal conflict could have on professional relationships and students’ learning hence something, which should be pre-empted, mitigated, managed or mediated. However, conflict, or disagreement, was also considered a natural by-product of working together – if most often articulated as a negative aspect of work – and some dissonance was considered a necessary component of collaborative work. As Lucy at *Tidewater* was keen to point out, “difference doesn’t mean wrong”. But, as she added, “that’s a big thing to understand when you first come into an environment like this”.

In most cases, it was evident that the majority of disagreements had been small and resolved between participants. However, in a small number of instances, principals reported stepping in to intervene. One, for example, commented they were about to intercede with a particularly ‘stubborn’ teacher who appeared adept at continually getting his or her own way. The principal’s concern was that some specific beliefs underpinned the behaviour – but previously unchallenged – and that the move into a collaborative situation had brought them to the fore.

Awareness of colleagues’ routines, stressors and wellbeing, together with the development of interpersonal strategies to mitigate and pre-empt conflict, were perceived to be instrumental in successfully cohabiting a space for any length of time. Teachers regularly commented on heightening awareness of their colleagues. Specifically, there was an acknowledgment of needing to understand, engage and empathise with colleagues in a way previously undemanded by more traditional classroom settings. Although teachers reflected that collegiality and the desire to ‘get on’ had always formed a valued aspect of teaching, the relational dynamics catalysed by the cohabitation of space appeared to accentuate similarities and differences, as the following illustrate:

You need super high social skills to be able to get by in an environment like this.
(Mitchell, *Hillside*)

Everyone has their off-days, and you learn how to judge people. (Ken, *Lakeside*)

I think everyone has got boundaries and it's becoming aware of each other's boundaries. (Rebecca, *Tidewater*)

We've all got differences in the way that we approach things, and those differences can be different again under stress. (Ryan, *Tidewater*)

Attention to relational aspects of work was also evident in specific professional learning geared towards engendering self-awareness, building emotional intelligence (Dolev & Leshem, 2017; Goleman, 2006; Neisser, 1988; Pajares & Schunk, 2002; Zeidner, Matthews, & Roberts, 2004), understanding how they dealt with particular situations and learning to detect dissonance in advance. School leaders cited several reasons for doing this: namely to help surface individual personality traits, teacher beliefs, default behaviours when under stress, and response under particular circumstances. At *Tidewater* and *Railway Terrace*, staff had utilised Herrmann's Brain Model (Herrmann, 1999) to identify and describe thinking preferences. Commonly referred to as a set of colours (blue-analytical, yellow-experimental, red-relational, green-practical), they had been utilised as a method of building self-awareness in teachers.

Empowering teachers to have timely conversations with colleagues was commonly referenced by principals as a strategy that would aim to 'nip things in the bud', and address issues before they became too embedded. Some teachers referred to developing strategies to help reduce and solve conflicts, although it was an area of discomfort for most. For Kelly at *Railway Terrace*, it was essential to be able to "have adult conversations. If you've got a problem with someone, go and see them. Talk about it. Deal with it". However, she admitted, "It's quite scary sometimes".

To pre-empt potential conflict, many case site schools had engaged in constructing formative team agreements, with overt articulation of the requirement to solve problems before they became too big. Referred to as "essential agreements", or Mutually Agreed Team Expectations (MATES), they had often been co-constructed by team members before the commencement of working together and included expectations for meeting attendance, record keeping, communication with parents, and teacher planning. Designed to address 'what if' scenarios early in the establishment of

teams, teachers referenced their existence: “We can revisit that at any time and hold each other accountable” (Jasmine, *Cityside*).

The establishment of pre-emptive agreements between team members was determined to be one approach towards addressing and alleviating potential conflict situations and considered by teachers to form a useful structure to support the collaborative process. Teachers often noted a critical component of the collaborative process was akin to “trying to get onto the same page” (Ryan, *Tidewater*). To an extent teachers felt respected through their opportunity to input into these documents and had welcomed the opportunity to co-construct them. However, although designed with modification in mind, there was little evidence of them changing over time. Often representing the results of dialogue before working together as a team, and in some cases before getting to know team members, one principal questioned the value of them, wondering whether the relationship was strong enough at the time to create the parameters for agreement. As such agreements appeared representative of conceptual intention, rather than as detailed processes for navigating specific examples of conflict.

5.5.1.4 “Trust, it’s like a vase...and when you drop a vase it just shatters”

Trust, its presence, growth, and fragility as Brendon (Principal, *Cityside*) noted above, stood out firmly through the interview data in several ways. Although many teachers echoed a desire to attempt new ways of doing things, they also recognised that the move into more open spaces constituted a significant risk for themselves as well as their colleagues. Teachers at *Tidewater* regularly referred to their school as being a ‘high trust’ model. Lucy (*Tidewater*) explained this as “being able to challenge someone’s perception or judgment of a situation. So having those open, honest discussions”.

Similarly, Emily at *Quarryview* spoke of having a level of professional and personal trust in her colleagues, which gave her a sense of confidence, support and encouragement:

I’m more prepared to take risks with trying new things out because I trust every single one of my colleagues in here implicitly. I know if I completely muck it up, the lesson that I’m giving whatever, they’ll just laugh it off, or if I need support, I can ask.

Typically, trust in colleagues related to ‘being human’ and ‘making mistakes’. The latter, in particular, seemed to stem from the implicit visibility of practice in ILEs. As Ryan (*Tidewater*) put it “you’re on show, to everyone, including your colleague”; the logic being that physical visibility contributed to ‘display’ and transparency of practice, hence a need for psychological and emotional safety. Although not commonly stated, some teachers referred to the type of teacher they had been in their previous classroom and the idea that they had had to modify this; with the idea ILE’s possibly diluted the ‘flair’ of individual teachers used to working on their own.

Teachers also commented on the need to trust one another when jointly responsible for the same cohort of students, specifically regarding planning, teaching, assessing and reporting. Emily (*Quarryview*) epitomised this sentiment when she shared, “I owe it to her. She’s putting in a lot of effort with that. I owe it to her to put in as much effort as I can with what I’m doing, as well”.

At *Cityside*, teachers talked of having gone through a challenging together but developing high levels of trust and collective efficacy as a consequence; “when we hit the wall, we hit the wall together, and when we had a great time, we had a great time together” (Lily) It was one of the few teams interviewed that dedicated time to spend together as a team outside school.

The other idea that came through was about having trust in colleagues to provide personal or pedagogical (often specialist) support. Sometimes teachers described asking for support, in essence acknowledging a weakness and desire to learn. Emily at *Quarryview* noted, “I’m not as confident in teaching writing...So I often go to Suzanne, who is an amazing writing teacher and ask her advice, and get her to check over things”. Similarly, her colleagues would regularly ask her for advice on technology usage.

Overwhelmingly teachers viewed collegial trust as instrumental to fostering firstly, a thriving learning environment for students, and secondly, a place of work for themselves. There was a realisation this would take continued work, which would recommence on transfer to a different team.

5.6 Emerging model: Enactment of teacher collaboration in ILEs

The findings demonstrate four aspects of enacted practice observed and articulated in six primary school ILEs; enacted pedagogical practices, enacted spatial

practices, encountered relational practices and enacted organisational and logistical practices. In an attempt to understand how collaboration was enacted, the findings go further than describing the enactment of pedagogical approaches. Instead, it became clear that teaching together in an ILE, derived from forms of co-teaching, alongside means of delivering curriculum, facilitating student agency, developing engagement, accessing diverse expertise, and responding to learning needs, was underpinned by considerable work together.

Hence, *working together* describes the functions and dynamics of making the ILE work. Much is made of structural components; systems for organising time, groups of students, leveraging technological affordances, and ongoing communication. Although this is perhaps implied in the work a teacher might typically expect to do, it specifically relates to the ‘doing together’ piece of activity when not engaged in teaching. Also, although there was relatively little apparent reference to space, and the spatial opportunities engendered through the provision of ILEs, it is recognised in the findings as locating activity and presence. Multiple examples of enactment practices observed, which, had teachers been on their own, would not have been required. Mainly this was articulated in terms of the affective domain afforded by visibility and deprivitisation. It includes aspects of cognitive demand, collegiality, teacher’s ‘mindset’ and willingness to collaborate, ideas of relative ‘ownership’, belonging, and understanding of personal boundaries. This is translated here as *being together*. Teacher collaboration in the case-site ILEs could be extrapolated to exist as the product of teaching together, working together, and being together. It is shown in Figure 5.1.

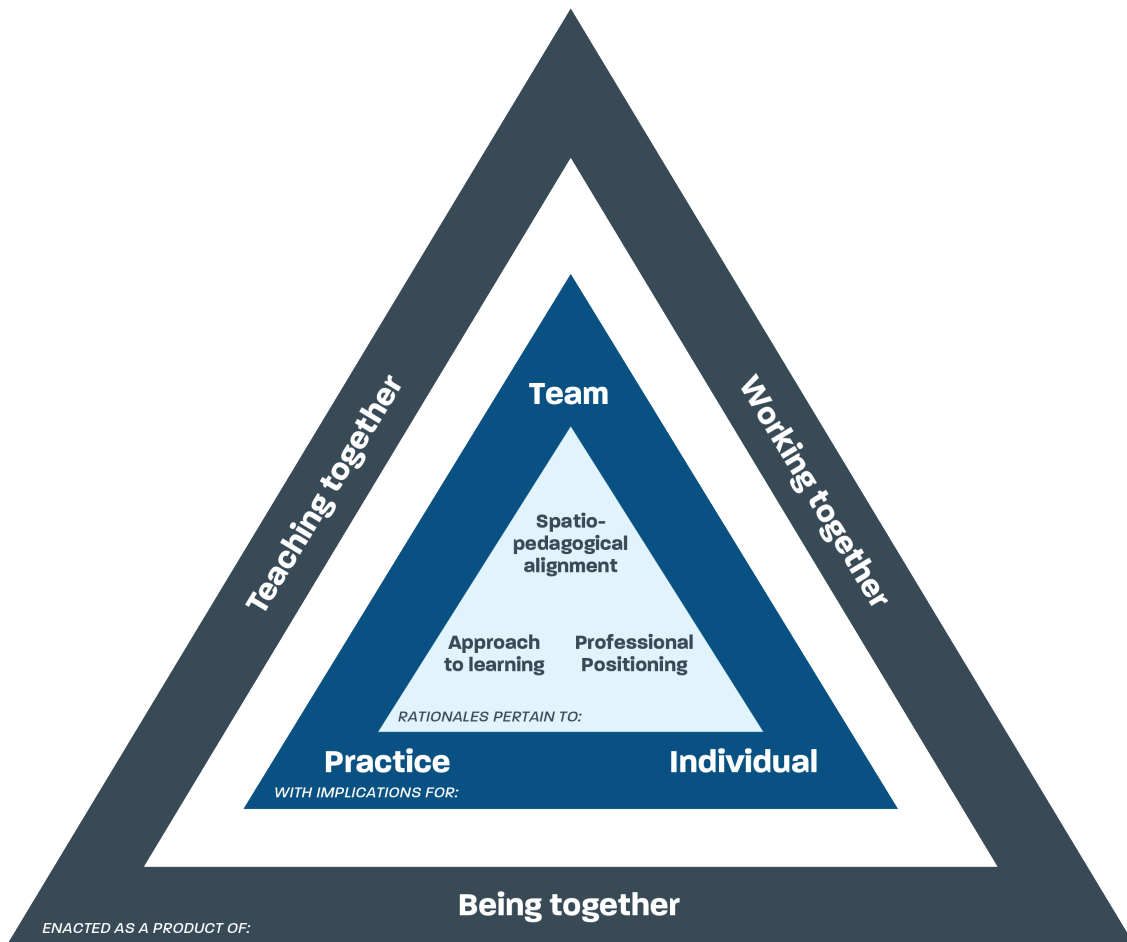


Figure 5.1. Enactment of teacher collaboration in ILEs.

5.7 Conclusion

Chapter 5 has presented data and findings from Phase 2 of the study, collected through 'snapshot' studies at six primary school ILE sites (elicited through reputational site selection); employing interviews with principals, teachers and students, observations, and images. In particular, it addressed the subsidiary research question:

- What practices have been developed and enacted by teams currently occupying ILEs, and to what extent are they collaborative?

The work that this chapter has contributed is through identifying practices enacted by teams of teachers in collaborative ILEs; in particular drawing attention to the nature of enacted pedagogical, spatial, relational, and organisational and logistical practices. Moreover it has posited the idea of understanding these through the structure of teaching together, working together and being together.

The following chapter presents findings from Phase 3 of the research, utilising the model of enactment to describe aspects of teaching together, working together and being together, across three research sites.

Chapter 6

Teaching, working, & being together – Phase 3 findings

6.1 Introduction

Chapter 6 describes findings from Phase 3 of the study, the final of three layers of progressive focusing (Parlett & Hamilton, 1976) contained in the study. Through this process the study ‘burrows down’ further into the phenomenon: from an initial focus on identifying rationales, characteristics, opportunities and challenges engendered through the provision of teacher collaboration in ILEs (Phase 1); through a series of broad site studies leading to the identification of enactment as a product of teaching together, working together and being together; and next to understanding more fully the intersection with space and spatiality. Hence, Phase 3 aims specifically to address subsidiary research question 3:

- To what extent is space a factor influencing teacher collaboration in ILEs?

As detailed in Chapter 3 this phase of the research was undertaken as continued engagement with one ILE team at three of the previous Phase 2 sites. In total three-four weeks was spent with each of the three teams at *Lakeside*, *Quarryview* and *Tidewater*, across a four-month period. At each site data were collected through a suite of interviews, group interviews, observations, and documentation. Consistent with the approach applied previously, it was analysed using an approach guided by the principles of thematic narrative analysis as developed by (Riessman, 2008).

The chapter is divided into three main sections, reporting findings from the three sites in turn. Each site is briefly introduced followed by analysis of findings under the framework of teaching together, working together and being together. The chapter concludes by revisiting and augmenting the emerging model.

6.2 Lakeside: Structuring for cohesion

With being a new school came organisational decisions about how best to cluster students while their numbers remained low. Therefore, the choice to co-locate the small cohort of Year 7 & 8 students alongside two groups of Year 5 & 6 students in a single learning studio, had been made on the grounds of spatial and staffing

availability; not an uncommon situation for new schools contained in the study. Hence the decision appeared as much pragmatic and organisational, as pedagogical.

Pedagogically, the school had found itself at a bit of a crossroads. Although beginning with a vision for learning and teaching, the principal reflected it had been somewhat ambitious to actualise. The decision to adopt the International Baccalaureate (IB) as an approach to local curriculum formed a response; an attempt to provide a unifying structure across the school, and alignment with desired outcomes.

Spatially, *Lakeside* formed a significant site. Participants in Phase 1 referred to it as an influential local model replicated elsewhere: its design effectively reversing the relationship between ‘breaking in’, and ‘breaking out’. The previously prevalent Learning Studio type models (Ministry of Education, 2012) tended to cluster classroom size spaces and afford ‘breaking in’ to a central shared space. At *Lakeside*, the emphasis was on ‘breaking out’ from a central zone into a set of small adjacent spaces, in this case, designed with a specific purpose in mind described in Chapter 3.

6.2.1 Teaching together

6.2.1.1 “Coordinated collaboration”

An unforeseen implication was the bifurcation of learning in the ILE, separating Year 5 and 6 and Year 7 and 8 programmes. Spatially, this manifested in effective co-location; one teacher (Ken) taking Year 7 and 8s, and two, (Bev, a beginning teacher, and June, a more experienced practitioner), taking Year 5 and 6s. Ken understood IB as containing different “descriptors of the inquiry” applicable to the two groups, and “because seven and eights are building towards an individualised end of the year exhibition”. Although through the data it was apparent that teachers acknowledged a high likelihood of overlap in students’ learning across the two cohorts, they did not view this as an aspect they could readily accommodate comfortably. In particular for Ken, “even though we’ve got some kids at the same level, our central ideas don’t link up”. The differences between the curriculum levels appeared, therefore, to render a barrier to higher levels of teacher collaboration. The implication was an effective separation of learning and teaching, and as will be seen, to a certain extent, space. Hence teacher June referred to their approach as being one of ‘coordinated collaboration’.

This ‘coordinated collaboration’ manifested spatially; Ken at one end of the studio; Bev at the other (she had chosen her position within the studio), and June in the centre. This layout was modified from the beginning of the year when Ken occupied the central position, resulting in difficulties for Bev and June when wanting to work together, and for students who found themselves “constantly crossing over” (Bev). Closer proximity had alleviated this problem.

6.2.1.2 Pedagogical approaches

Observations of teaching at *Lakeside* revealed careful consideration towards time and the pace of learning. Bev and June, in particular, routinely taught blocks of mathematics, writing, reading, and inquiry, often aiming to create connections between literacy and inquiry and extended time on tasks. Three days a week, each offered three quick (20 minutes) back-to-back workshops (at the time of study these were writing-based). Bev and June based themselves at their respective teacher stations (flat-screen TV mounted next to small whiteboards, on a movable piece of furniture containing shelves and storage trays, which acted as ‘home-base’ for their ‘class’), with support resources and reference material made available to students on Google slides, via the school website. Students signed up for their selected workshop (with either teacher), arriving slightly before commencement, sitting on the floor behind the previous group, and moving forward on cue. Those not actively attending a workshop worked on related tasks or completed follow-up learning close-by.

Bev and June acknowledged altering their approach in mathematics away from their workshop approach, following evaluation of assessment tasks. Instead, they focused on their own ‘class’, particularly ‘gap filling’ around specific needs. During observations, Bev and June would occasionally team-teach the whole cohort. When this occurred, it would usually take place in the performance space, where they could close the door in order not to disturb the Year 7 and 8s.

June reflected on her expectation for students to come to her for conferencing purposes, although as she admitted, this was slightly at odds with the intention of the ILE. Similarly, the way she imagined using the learning studio was not what she felt was occurring. June had imagined taking groups into the collaborative space (Orange room) to work more often. In contrast, she taught mainly at her teaching station or from the adjacent round table where she often kept her stationery and laptop. Similarly Bev

appeared to have a relatively short range; usually basing herself at the teacher station, facing towards the outside of the room. Alternatively, she spent time sitting at the ‘caterpillar’ table close-by, interacting with individual students; this was a popular place to sit for her students engaged in independent learning, as it was easy to access teacher support.

The approach adopted by Ken was somewhat contrasting, with a specific focus on teaching short small group sessions at his teaching station, at the adjacent round whiteboard table, with large groups in the art/science space (utilising the whiteboard), (arranged when he knew June and Bev were not going to use it), and with individuals conferencing around the ILE. He used short teaching sessions to introduce new concepts and ideas but spent the majority of time in individual student conferences and discussions about their inquiry learning. Ken saw himself less as a ‘sage on the stage’ and more as part of the ‘pit crew’ for students: “they check in with me when they come through on the lap”. Ken was observably more mobile than his colleagues, frequently ranging from the corner of his room to wherever ‘his’ students were learning. Often this meant his moving to the resource room, art area, or performance space. Also, his students would generally go to the library following morning tea and lunch breaks for ‘personal reading’, and again often out for PE activities. As June joked, “Ken gets restless”, which he agreed with, but he also referenced professional learning on how long students could realistically maintain attention. In his belief, short, targeted sessions were particularly productive.

6.2.1.3 Use of purposeful space

The ILE design reflected an aim for teacher collaboration and differentiated learning activities; with co-constructed guidelines and expectations, if not rules, around usage. Furniture also supported this, helping reflect intent. Charlie (Year 8) described them as “tailored for their purposes”. Students wanting to work undisturbed knew that they could go to the ‘Individual space’ with a reasonable expectation of quiet; they would not need to negotiate with incumbent occupants in order for it to be so. In the main, students were respectful of these established norms. Teachers noted they had spent considerable time at the start of the year engaging in discussion with students regarding spatial usage. During observations only occasionally were teachers required to reinforce them. The scale and shape of the ILE also helped facilitate this. Teachers

were never very far away, and the design afforded good sightlines through the space. As a result, students could confidently express spatial preferences and appreciated the norms in place. Accordingly, they demonstrated a clear sense of space and capacity to navigate it:

Sam: If I want to work alone and I desperately need to get something done, I will go to the red room.

Faith: It depends on the mood I'm in. When I'm with some of my friends, I might sit in the orange room or the performance space.

Charlie: I prefer to work in here because you can share your ideas with your friends and work collaboratively (Art/science space)

As a by-product of this, teachers had observed a reflexive relationship between learning and space. June commented; "they are starting to self-direct. To me, that was quite powerful in terms of how they learn...and it told me information about how they want to work".

6.2.2 Working together

6.2.2.1 Curriculum: '*speaking the same language*'

Although relatively early in implementation, it appeared the adoption of International Baccalaureate PYP⁵, with its integral frameworks and language, provided an effective mechanism in a shared environment. It gave the space, and its inhabitants, a shared language, and Julie hoped it would lead to coherence of approach through the school. The language related to 'attributes', (inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced, reflective), and 'attitudes', (appreciation, commitment, confidence, cooperation, creativity, curiosity, empathy, enthusiasm, integrity, respect, tolerance). Students often used the terminology in reference to learning. Julie considered that having a shared language would also assist teachers in transfer year levels in the future, as well as to discuss students' learning. She held a slight fear studios would become insular, "becoming schools within schools,

⁵ Under the International Baccalaureate system Year 5 and 6 students follow the Primary years Programme (PYP), and Year 7 and 8 the Middle Year's Programme (MYP). Within full primary schools in the New Zealand context however, it is more common for the older students to follow a version of the PYP.

where everybody just does their own little thing”. The physical containment and lack of immediate connectivity to other studios, she noted, potentially meant each could operate in isolation to each other.

6.2.2.2 *Emphasising collaboration (professional learning)*

In addition to IB implementation, teacher collaboration was also a focus of professional learning. Julie (Principal), drew on recent local research to prompt staff discussion, particularly emphasising the importance of professional collaboration, emphasising that “collaboration is not a passing fad; it is something that we really need to do”. In her view, the context of IB provided an excellent opportunity to coalesce around a shared project and collaborate on something purposeful; “It has certainly helped give us that common language”. Likewise, she felt shared language and concepts developed through PYP would, in turn, enable greater collaboration in particular because themes were developed simultaneously across the school, inviting cross-pollination of ideas, and appreciation of student development.

As evidence of embedded language usage she cited teacher comments on recent school reports, noting, “when you read them, they’re all talking about the PYP learner profile”. In her view, this was a significant step forward. Julie also referenced the work of Little (1990a), in particular concerning the idea of collaborating as ‘joint work’. The quotation she shared noted joint work as, “a process of co-participation that entails reflective inquiry, criticism, and learning as integral constituents”. For Julie in particular, this translated as “not just playing nice, it’s actually having the deep discussions”. Her suggestion to teachers was for them to revisit their ‘essential agreements’ to ensure they included norms around these aspects. Significantly, this was the single occurrence where explicit professional learning on teacher collaboration was taking place.

6.2.3 Being together

6.2.3.1 *Observation & feedback*

Proximity provided an opportunity to view one another’s practice, but teachers expressed hesitancy towards observing colleagues outside formally designated and agreed times. As Bev noted, “we don’t really observe each other when we’re teaching.

It's always scheduled, so if June's going to observe me she'll always let me know about a week in advance". Teachers put this down to absorption in their work. As principal Julie commented, "just by virtue of sharing a room doesn't mean to say you have that time to observe somebody else teach. Because actually you're teaching, you're busy working".

On the other hand, it appeared observation insinuated checking up and critique. Even when teachers said they had seen what was going on, they were keen to note they were not explicitly watching. As Bev noted, "I wasn't observing or anything, it was just in walking past". Likewise, for June, it was clear that observation of her practice had a time and place and it was not welcome outside particular parameters; "I'd hate to think that she thought I was watching her all the time" (referring to Bev). It appeared that teachers were reticent to discuss things they had learned from colleagues during time in the ILE. Instead, the idea other teachers might be surreptitiously observing what was going on while a teacher was teaching was viewed in part as being detrimental to the professional space in which teachers found themselves. Perhaps also because teachers were often working with their 'class', there appeared only a low level of incidental conversations between teachers. Compounding this, the fact June taught groups of 'target' students (Year 1-8) in the library from 8.15-8.45 am (mathematics on Monday and Tuesday, inquiry on Wednesday, and literacy on Thursday and Friday), (a programme instigated as teachers considered there was not the time during the day to do it), and would arrive in the ILE shortly before the start of the day.

A similar finding emerged when discussing the idea of feedback to peers. Again, outside formal observation times it was not a culturally normed practice in this setting. When asked if feedback had occurred, teachers interpreted it as affirmations or advice, rather than capacity building. Here, feedback was associated with concern over practice, rather than developing it, as dialogue from a group interview illustrated:

Ken: Yeah, I don't think we critique. I think we sort of say I really like...

Bev: You guys say to me sometimes I really like the way you did that, or good job, which is nice.

June: But I would never comment and say, 'Ken what the hang were you doing', unless it's in a joking way. But in terms of critical, like providing critical

feedback, I would like to think no. No, I don't think that would be a positive environment.

In much the same way, the three teachers were able to relate limited instances of things that they felt they had learned from one other. Bev, for example, had picked up from Ken the idea he was "very focused on the purpose of the learning, making sure the kids know why we're learning this...so I've started doing that too, which I think the kids found really useful, especially in my reading programme". June found it hard to "really think of anything specific" but in its place considered she was learning things, "almost through osmosis".

Spatially, the arrangement of furniture in the ILE may well have been a contributing factor. The positioning of teaching stations within the central learning space meant visibility between them was restricted when teachers sat working with groups. They tended to sit with their backs to their colleagues: more sociofugal than sociopetal (Osmond, 1959). This was only revealed later in the research through a student photo-elicitation task that revealed minimal sightlines between teachers when they were sitting at their respective stations. Further interrogation suggested that this had not necessarily been an intentional practice; all the same, it remained an interesting observation.

6.2.3.2 Territorialisation: Spatial hierarchy and virtual boundaries

An unexpected finding, emerging through analysis of observational data, related to the way the Year 5 and six teachers and students occupied the learning studio when Year 7 and 8 students were elsewhere in the school. It was routine for the older students to go from their morning break, and lunchtime, into the library for fifteen minutes of personal reading. At other times they would be in the hall or outside, playing team games. Although the designation of one particular area of the learning studio as the Year 7 and 8 area did not appear to be a formally exclusive, (the philosophy was that students could go anywhere), by default it appeared the case. When the Year 7 and 8 students were off-site for a day, an invisible boundary appeared around their corner of the ILE, remaining unoccupied. Younger students considered it "more a Year 7 and 8s work area" (Stephan, Year 6). Likewise for Jasmin, "that's mostly Year 7 and 8...so I don't go over that way that much. I don't really work there". The 'home base' area for the older students had much the appearance of being 'out of bounds' for their younger

peers. Teachers, similarly, were not observed occupying their colleagues' teaching stations.

A similar phenomenon occurred in other parts of the ILE where it appeared the older students had an established if unintended priority. For example, year 5 and 6 learners rarely occupied the art space, or resource room while the older students were in the studio. Accordingly, Charlie, one of the Year 8 students, noted: "usually year seven and eights work in the teacher space". Teachers rarely utilised the resource room other than as an area to store personal items. Younger students appeared only to visit to collect equipment, particularly their iPads. They tended not to position themselves there for independent learning. Although there were no overt signs of territoriality on the part of the older students, it felt inferred. Ken was cognisant of it, acknowledging, "It's a very weird dynamic. It's like you've planted a flag and you can't move around". He had observed a similar situation in the performance space from time to time, although observations showed this to be a more evenly occupied space.

6.2.3.3 Relational navigation

Teachers at *Lakeside* were well aware occupation of the ILE still required effort towards getting along with one another and included a bit of mutual give and take, even if in their admission, they were not overly engaged significantly in collaborative practice. In the view of Ken, "being collegial" was important; "you don't have to get on with people in the studio, but you have to be willing to go along". There were two implications to this for Ken. Firstly an acknowledgement, "everyone has their off days, and you learn how to judge people. I know when June and Bev have had a bad day because you can tell". Secondly it meant developing an awareness of how other people work; "I'm just lucky that for the most part June and Bev are quite consistent. I'm the one that flutters and does all the weird sort of stuff. It just works out that way".

Where tensions had arisen previously, they had revolved around shared resources, particularly laptops, as well as general tidiness. Tidiness appeared to be an ongoing issue. June noted she had addressed a concern about the use of the shared creative space and had seen some improvement: "It's one area that everyone uses... the kids now get that it actually needs to be tidy". June saw herself as 'mum' of the ILE, with a mindfulness towards tidiness, structure, and order: "That's how I operate. My reading stuff is there. I've got my drawers where my stamps live. Pens are in the green

containers. The group boxes are on top”. To June, this was an essential element of being a teacher, and something she had learned to accept was not necessarily everyone else’s priority. Conspicuously, any asides and or jokes about ‘tidiness’ were directed, most often, towards Ken:

Once upon a time I thought, you know, I’d walk into a messy classroom and think, ‘oh no’. But now I kind of look at Ken’s mess and think, that’s his mess, that’s how he operates, that’s fine. Mine’s tidy.

Through growing mutual awareness it appeared the three teachers had agreed, “you need just to have a laugh and don’t sweat the small stuff” (Ken), and instead to focus on their work, and students. Some of this seemed to be concerned with maintaining the ‘relational climate’ inherent in cohabitation. As June noted, “I think if we were all real snarky at each other and short with each other, it wouldn’t take long for the kids to pick up on that and the whole climate of the studio would drop”.

The apparent lack of tension or need to provide feedback appeared to result in collegial, if not collaborative arrangements.

What had attracted Ken to *Lakeside* were the prospect of working in an ILE, the vision of the school, and the opportunity to work in an environment that valued “collaboration, questioning, and problem-solving”. In particular, this related to learning being connected to authentic fields of inquiry. He was concerned about the forthcoming arrival of relocatable classrooms, where teachers would work on their own, “change our teaching practice”, and work against the emphasis on collaboration. It would, he noted, “be so different from what is happening in the existing ILEs”.

As observations unfolded, it became increasingly apparent that the level of collaboration between the Year 7 and 8 teachers, and the pair of Year 5 and 6 teachers was minimal. Instead, the groups appeared to coexist in the studio, moving to slightly different rhythms, never once meeting together as a whole cohort. The level of conversation between teachers both before and after school was civil but businesslike. It appeared that although three teachers were operating within the ILE, this did not automatically result in a high level of collaboration.

6.3 Quarryview: A school in transition

For teachers at *Quarryview*, the preceding four and a half years had been a period of considerable professional and personal uncertainty. Set within a community coming to grips with their post-earthquake situation, with disruption to local infrastructure, personal property and ongoing (psychological trauma), changes to their school and workplace formed only one component of ongoing alterations and disruptions in their lives. Forced to shift out of their school due to extensive damage that rendered their buildings uninhabitable, students and teachers had been temporarily split across two local sites where teachers found themselves teaching in dormitories, corridors and temporary premises. Returning a few weeks later they were re-housed in tightly clustered relocatable classrooms on a small portion of their original site.

The learning environments teachers eventually moved into following the extensive rebuild, were a far cry from those that they had inhabited previously; the first ‘Modern Learning Environments’ (the language used at the time), in the area, which went on to provide an exemplar for subsequent local developments. Purpose-built to house groups of six teachers split into two groups of three, at the time of research the ILE consisted of two ‘studios’: one with two teachers (Gillian and Suzanne, both experienced teachers); the other with three (Gemma, Emily, and Fiona, a beginning teacher), and a total cohort of 124 Year 3 and 4 students. Gillian was the team leader across the ILE.

The relevance of continued study at *Quarryview* was as a site having undergone significant spatial change, with existing personnel, mirroring many situations across the country.

6.3.1 Teaching together

6.3.1.1 *Practice in view: Learning from one another*

Along with their school leaders at *Quarryview*, teachers viewed enhanced deprivitisation in their ILE as a significant step towards professional growth, accountability, and an opportunity to share good practice. What became interesting was in understanding how, and when this took place between teachers when in situ. Observations and interview data suggested it this happened in one of three ways: casual, impromptu, or prearranged.

Pearranged, as it suggests, was organised in advance. It was mostly associated with appraisal or beginning teacher (Provisionally Registered Teacher) observations, where the emphasis was on providing feedback. Teachers had taken opportunities to observe colleagues as part of individual professional inquiry but generally chose to observe colleagues elsewhere in school rather than one another. Outside these, although teachers had release time during the week, there was little evidence to show they would intentionally utilise this to observe colleagues' practice. More likely, impromptu learning occurred when teachers deliberately approached a colleague to ask them something. Observations showed this happened relatively often during the day, and often quite fleetingly. Lucy gave a typical example:

I'm not as confident in teaching writing. So I often go to Suzanne who is an amazing writing teacher and ask her advice, and get her to check over things... and get some advice on how I could take it on to the next stage. You can have those really quick conversations on the run... whereas in my own classroom I may not have asked for her feedback because she wasn't right there.

Teachers reflected that the shared environment meant that colleagues were more immediately available to one another for these short interchanges, often transactional, and sometimes when children were working on an independent task.

Casual by comparison illustrates the incidental learning that went on as a direct consequence of physical proximity. It was unplanned, often 'just in time', and quite serendipitous. Additionally, it may well have occurred without the knowledge of the teacher being observed. As Lucy noted:

I was sitting over there and we were teaching a similar thing about vowel sounds but to different ability levels. I saw Alison doing something, and thought, oh that looks good, I'm going to steal that idea, and did it right there, and it worked with my kids. It was just something that I hadn't thought of doing.

At times the gap between observation and adoption was recognised to very brief, reminiscent of the Campbell et al. (2013) reference to 'mimicked and appropriated practices'. In this example, proximity and visibility led to altered practice.

Although teachers noted that they had not engaged in much by way of formal observation, informal observations and incidental learning had been prevalent. Teachers

acknowledged multiple examples of what they had seen occurring incidentally, and how their practice, as well as pedagogical content knowledge, had changed as a result. As Lucy commented, “there’s just a lot of development all the time, and it could just be that you just spot someone doing something”. Specifically, teachers cited that this caused them to reflect on their practice.

In contrast with a classroom spatial setting where teachers were primarily able to mediate what was seen, and by whom, there was broad recognition among teachers; practice was now in the public domain. Strikingly, ‘public’ in this sense was often appropriated as an adult-adult reference, generally exclusive of children. Colleagues were ‘public’. Children were not. Observations, intentional or not, were inevitable. The concerns teachers’ held over deprivatised practice were frequently couched in terms of apprehension over perceived quality of their own performance, rather than others. This seemed most applied when one teacher was taking the lead with the whole cohort of students whilst colleagues were present. As Fiona commented, “it’s just the feeling of having them there watching me. It’s not the children, it’s the teachers...I think I’m afraid of making mistakes in front of teachers”. For some teachers, this onset of ‘professional exposure’, ‘performance anxiety’, or ‘stage fright’, had manifested in self-questioning. As Emily explained, “We weren’t used to people observing us. We always got worried”. Fortunately for Emily, now “it’s just a natural thing”. This sentiment was widespread among her colleagues’ but led to the realisation for Suzanne she had not spent much time “seeing many other people doing what we do”.

For teachers, there was a recognition that both observation and seeing had quickly become understood as integral to the new spatial arrangements. Where the data revealed, a grey area was between ‘what was seen’ and what occurred as a consequence. Teachers often showed reservations about giving colleagues critical feedback in these ‘seen’ situations, and instead would more commonly determine feedback to be a component of pre-planned observations, particularly for appraisal and mentoring purposes. Feedback was reported to occur but was often self-sought, mirroring Campbell’s (2013) notion of the way the de-privatisation of practice is enacted and mediated through cultural norms.

Although school leaders commented that it was desirable for “teachers to be giving each other feedback and challenging each other’s thinking” (Greg, DP), they

recognised that, “it was still an area for growth” (Claire, DP). Correspondingly for school leadership, there was a desire for helping to create the conditions where teachers could be more ‘comfortable being uncomfortable’ in these situations.

6.3.1.2 People in view: “I like the fact that we can see each other”

The design of ILEs at *Quarryview* meant that much of the teaching and interaction occurred in the central areas. Within this, teachers often sat at a teaching station (flat-screen TVs mounted next to small whiteboards, on a movable piece of furniture containing shelves and tote trays), that acted as ‘home-base’ for an allocated group of students. In doing so, the placement of this furniture could have either, intentionally or not, created opportunities to be seen or, as (Saltmarsh et al., 2015) has noted, to avoid scrutiny. In this case, teachers had made a deliberate decision to position the teaching stations, so that when sat adjacent to them, they faced the centre of the room and one another. As Emily noted, we:

Actually made sure we could all see each other from each angle... because there’ll be something that happens and you can just catch one another’s eye and you have to giggle, or ‘yeah they got it!’

This sociopetal (Osmond, 1959), (rather than sociofugal), approach was observed to have created connections and helped to support conditions that enabled cross-room verbal and non-verbal communication. It reflected a highly collegial approach where sharing of stories and incidental celebrations were highly valued. It was also strongly reminiscent of the delightfully dubbed “collegial eye rolling”, observed in the study by Peterson (2015).

While this was perhaps more indicative of what Hargreaves (1994) might note as collegiality rather than collaboration, it reflected a high level of trust between the case-study teachers. A similar practice was observed between the pair of teachers in the other part of the ILE. “I like the fact that we can see each other”, remarked Suzanne.

6.3.1.3 Engaging with space: Making changes

Spatially, teachers were mindful that their new environment presented an opportunity to break away from more traditionally held approaches. Hence, as Suzanne reflected, “we didn’t realise it but we were still being single cell teachers”.

Furthermore, teachers recognised they had not utilised the ILE to its full potential; beginning with very little understanding of how they might best occupy the space to alter practice. However, the more pressing need to prioritise organisational structures, in light of occupation with a full, existing student cohort, had overshadowed engagement more fully with spatial aspects. As Suzanne commented, “we haven’t even moved the furniture”.

A year into occupation and teachers felt they were still considering the furniture usage and layout. They acknowledged, however, increased ‘headspace’, confidence, and purpose towards inquiring into how spatial changes might influence learning. In particular, the large, central breakout space was particularly underutilised. As Gillian noted, “we’re not necessarily making the best use of the Blue Room” (as they had dubbed it). Similarly, for Emily, there was an acknowledgement, “it’s a decent size room. In a traditional school, if you had a spare classroom next to you, you’d be in there all the time”. In part, she attributed this to keeping it vacant so students from the other end of the ILE could use it; yet her colleagues perceived there was poor visibility into it, and so were reluctant to do so.

Although not having spent much time discussing it, ideas were undoubtedly emerging as to how the ‘Blue Room’ might be purposed. In particular, Gillian visualised it as a room that could reflect the changing areas of student inquiry. Described as a “museum’s discovery room”, Gillian felt this could help create a sense of wonder and interest in students. Alternatively, Suzanne considered its potential as a flexible space such that, “Whatever their learning was, they could show it in whatever medium they wanted to...and the blue room might be the place where if they go and do drama or dance”.

On returning toward the end of the research period, it was clear that teachers were utilising the Blue Room with more intent; display stands illustrated contemporary inquiries, and furniture was set out for individuals and groups. Students regularly moved in and out.

The notion behind possible usage of the Blue Room evidenced acknowledgement of a relationship between pedagogy and space that as yet had not been fully realised. Extending practice towards an inquiry-led approach reflected

potential and a possible way forward. It was as if the environment was gradually hinting to teachers how it might be purposed.

For Fiona (teacher), there was a realisation that altering the layout of furniture could have an impact on how students engaged. “It does change the way they work. I didn’t realise there’d be so much change in the way the place works just with moving the furniture.” By changing the layout in the area by her teaching station, she had noticed a subtle shift in students’ behaviour and engagement. Although early in her career, it appeared Fiona’s awareness of, and attention towards using the space as a component of her practice was growing. Interestingly, before she began teaching she had been a ballet dancer. With spatial awareness presumably a somewhat natural disposition, this was a fascinating comment.

6.3.2 Working together

6.3.2.1 Structural heritage: “My class goes to the library at ten on Monday mornings”

Arrival at *Quarryview* on a Monday quickly became associated with a different experience of learning than on other days. Described as “mucky Mondays” by the teaching-team, it reflected ‘classes’ rotation through timetabled experiences external to the learning centre. Examples of these included sessions in the library, swimming at the local pool, and tennis lessons. These were timetabled according to ‘teacher groups’, resulting in the suspension of cross grouping during that period. Students, therefore, spent the day with ‘their teacher’. Because frequently two ‘classes’ were out simultaneously in contrast to most of the week, Mondays in the ILE felt relatively empty; an example of routine carried over from previous spatial settings. The outcome was a temporary cessation of the collaborative approach.

6.3.2.2 A place of possibility: “We’re not there yet, but we know where we want to be”

School leaders considered developing an approach to self-directed learning was a key component captured within the school’s graduate profile. Conceptualised in three strands (agency in the learning process, active partnership, and a strong sense of self), the idea of self-directedness was regularly referred to as a central tenant of their contemporary pedagogical model. It underpinned an aspiration of what collaborative

practice and teaching within ILEs would ultimately achieve and afford. Hence professional learning had been spent understanding what self-direction meant to staff, and consideration to how it might look across different age levels. Initially, according to Greg (DP), this had been intentionally left open to some interpretation; “learning teams have had the freedom to try different approaches that would work for them”.

More recently, school leaders had reflected on the need for a more uniform approach. Claire (DP) articulated a concern related to the nature of learning that was going on under the guise of ‘self-direction’. For her, a key concern revolved around the interpretation of self-directed learning as demonstrative of low cognitive level activities. She questioned, “what are the students doing when not with the teacher, that’s worthwhile, that’s supporting their learning, and isn’t just busy-work?” She was worried the concept of self-directedness might well default into tasks which prompted behavioural engagement, and that having children on task in a quiet room might be prioritised over learning designed for cognitive engagement. Consequentially school leaders had developed and begun to implement rubrics of progressions, which illustrated a progression of self-directed learning across the school, broken down into what it looked like across the year levels. As Greg explained:

We’re now at the point, where we’re starting to bring back together some of those common approaches, consistencies across the learning teams and really plucking out what’s important for us at school, what’s going to get us to where we want to be.

The team of teachers shared the aspiration to achieve high levels of student self-direction. Under their admission, they believed, “we are not there yet but we know where we want to be” (Gillian). Similarly, they often articulated when they felt ‘things were going well’; times associated with high levels of student engagement and use of inquiry-based methods of learning, prompting an enthusiasm to explore this approach further.

Teachers saw that what they had achieved with their Daily 5 literacy programme aligned with their aims around self-direction. They had adopted the practice before shifting into new spaces and determined by the team to be a useful, and a commonly understood framework to support their literacy teaching together. This was seen to be pertinent not only because there were shared understandings of how the programme

worked but that built into it was the idea of structuring self-directed practices into learning routines. During Daily 5, students rotated in 15-minute blocks through a series of activities: read to self; read to somebody; word work; and listen to reading (using headphones with the laptop). Within each, students could often choose from available materials, as well as where they selected to situate themselves. Also, there was an expectation for students to record the activity they had been working on a pre-printed individual weekly overview.

Teachers often noted how space was used differently for the particular styles of activities and reflected this was what they were aiming for the whole time. It formed one of several critical reflections, which suggested to them there was a relationship between student learning and spatial usage. As Suzanne commented:

They spread out more, and go outside. I think because part of Daily 5 is they learn to find a space where they can do activities with different sort of focuses, whereas, in other subjects, we don't have that same kind of thing occurring; it's not part of the training.

This reflection, corroborated by observational data, suggested a heightened level of opportunity for students to make decisions about where they were learning during Daily 5. It appeared the structural surety, and temporal boundaries offered by the routine meant teachers maintained a sense of control over what was going on but also supported students to exercise decision-making. Students spoke of particularly enjoying the opportunity to choose relevant material for different activities. They demonstrated an understanding of the time allocated towards each task and the expectations of them. They knew where to access the material required for each task, and were aware of spaces set aside for particular activities. The structure of the programme, although relatively rigid, was enabling for students and teachers alike.

Teachers acknowledged five to six weeks had initially been invested into setting the Daily-Five routine. They had taken each of the tasks, in turn, gradually and deliberately building students' capacity to understand what was involved. As a component of this they had explored with students what success would look like, as well as setting out task expectations. For example, with 'read to self' were encouraged to be, "somebody that starts straight away, and someone that stays in one spot" (Gillian).

One of the most noticeable aspects of student voice gathered at *Quarryview* was the articulation of structural components of self-direction. Data collected, mainly through photo-elicitation and accompanying narratives, proved a rich vein of information regarding students' organisational and spatial literacy; reinforced with student captured images and observational data. Students were highly cognizant of routines, where materials belonged, and where learning would and could occur. They often also acknowledged structural components reinforced by wall displays and signage as providing further navigational support.

Although across the school it appeared approaches towards self-direction were varied, in this ILE and in the context of literacy, teachers were clear about what they envisaged, and had in their view achieved it. This mindset appeared to render their ILE a 'place of possibility' in a way they had not been initially able to envisage.

6.3.2.3 “Yes, we’ve nailed it”: A place of efficacy

Like students, teachers appeared cognizant of 'what success looked like', and 'next steps' might be in their context. Their approach appeared to engender a high degree of dialogue, reflection, and pursuit of the next step; a place of efficacy, with their individual and team learning couched in language of potentiality, achievability, and opportunity. As the teachers explained:

I feel like there's more possibilities in here ...it's partly because of the space but partly because you can tap into more people. (Emily)

I think we're turning a corner with the writing...up until now we were kind of grouping them on ability, and now it suddenly dawned on us let's look at the writing, look at what they need, and then workshop them according to where they are in their writing...There is no way the children could have had that learning in a single-cell class. Because you just didn't have the adults in there. (Suzanne)

Gillian: We've done one super-duper inquiry. It had every element, and when it was going well you felt it, you knew it; yes, we've nailed it. (Gillian)

To Emily, their new ILE gave rise to increased opportunities for self-directed learning, “partly because of the space but partly because you can tap into more people”.

Although they suggested the up-scaled built environment encouraged them to adopt alternatives to more familiar teacher-centric models, how they might accomplish this was less well understood. As Suzanne noted, “if we want our children to be self-directed, then we have to do the teaching around that, so what is that?” (Suzanne). In detailing what was understood by self-direction, teachers reflected wanting students to understand their learning goals, and how they would achieve them, as well as making choices regarding their learning.

6.3.3 Being together

6.3.3.1 *A collegial place*

At *Quarryview*, one consequence of adaptations made following the Canterbury earthquakes had been alterations to the school timetable. Lunchtime breaks had been split between junior and senior students to reduce crowded play space around and between the densely packed relocatable classrooms. With the playing field still being refurbished, this practice had perpetuated, leading to an absence of staff in the staffroom at lunchtime (they were more generally present at morning tea). For the team in the study, their preference during lunchtime was to remain in their ILE occupying not their teacher office where resources were stored, but one of the art rooms adjoining the main teaching space. Teachers closed the glass door and it became a defacto adult space, a place of conversation. As Sienna (student, *Quarryview*) acknowledged, “you’re not allowed in there unless you need to get an icepack out of the freezer”. It was quickly apparent this place-time formed a distinctive and essential assemblage. Students, navigating through their ILE reiterated and respected this. They were careful to point out its accoutrements: “...that’s the teachers’ fridge, their wee teapot, the teachers’ microwave, and their toaster...” (Amelia).

As well as typical lunchtime banter, there were frequent reflective interludes: musings on the timing of a lesson; where they were ‘up to’ in their literacy; comments about a success with a student; challenges experienced by others; concerns raised over another; reiteration of a conversation with a parent; discussion about a new student; ways of wording report comments; and reminders to collect sports equipment. Jenny, commenting on the nature of the conversation, noted: “This is a normal lunchtime, when teachers constantly evaluate what they have done in the morning”. The art room

appeared to present a relatively ‘safe’ space for this informal evaluation of practice to occur.

Also, this assemblage reflected a level of attained collegiality; revealed through the rhythm and timbre of chitchat and laughter, the nature of familial references, the level of gentle ribbing, and the revisiting of regular themes. Several team members had worked together in the school for many years; considered one another close friends and spent time together outside school. Their shared experience, some undoubtedly strengthened through personal adversity following the Canterbury earthquakes, had resulted in a tight relational bond. Teachers regularly recognised one another’s professional and personal strengths and contributions, (although references to their own influence were more often self-effacing); a strong thread that ran through the *Quarryview* data. They theorised the successful occupation of the ILE was in part due to the strong relationships that existed between themselves.

In this case, collegiality did not rescind the presence of dissonance. It was evident teachers had found the need to have what they referred to as ‘courageous conversation’ from time to time, and although building capacity, a practice that for some that, “I really struggled with earlier” (Emily).

6.3.3.2 Teams as ‘inward-looking’: The concern over Balkanisation

Establishment of ILEs at *Quarryview* had, in part, developing a more collaborative approach to teaching. It was evident, however, that the team acted relatively autonomously, held a collective identity, and worked in relative isolation to other teacher-teams. Daily interactions with members of the leadership team visiting the ILE were frequent (one of the senior leaders worked to support some individual students with their reading) but visits from teaching colleagues in other ILEs were not.

Similarly, the team acknowledged they rarely spent time in other ILEs across the school. Teachers reflected the experience might well help to foster a cohesive approach across the school, and mutual learning from their colleagues in different year levels; mainly critical when mapping out expectations underpinning the graduate profile. They put this situation down to ‘finding their feet’ in their ILE, which, coupled with the split in lunchtime arrangements, appeared to result in relatively intensified local containment.

6.3.3.3 Workload perception: “No one wants to leave earlier than the others”

An unexpected finding emerging through interview and observational data pertained to co-presence and workload; ostensibly it related to the work teachers did before, and particularly after school and inferred an undertone linking time in-situ with relative professionalism. It manifested through evidence of teachers being acutely aware of the time their ILE colleagues spent at school; particularly those who began early or habitually stayed late (some had regular schedules arranged around child-care); something that under previous spatial models would have been less apparent.

For one teacher, there was some reluctance to leave at the end of the day before her colleagues. As she commented, “no one wants to leave earlier than the other person” (Fiona). On the one hand, this appeared triggered by self-perception, but on the other, by concern over missing something important that might impact on the following day.

The latter arose from proximity equated as availability, and availability that equated as the time to talk. Hence teachers commonly spoke about how much time they spent talking after school; whether in prearranged meetings, or in cases of the previously identified ‘pseudo meeting’, where more casually initiated conversations, or short interchanges, evolved into more in-depth conversation resulting in decision-making. It was this that had led to Fiona’s comment. In some regards, it appeared an entirely natural thing to do – to initiate conversation with a proximal colleague. However, she also believed some of her planning might need to change as a result.

The idea these pseudo-meetings could occur quite spontaneously left one teacher to wondering when they were going to get “their work” done. As a consequence she had adjusted her workflow in order to create more “quiet space” for herself, getting up earlier to get work done at home, and arriving a bit later in the mornings: “I’ve actually made that decision because I cannot concentrate and do the jobs I need to do when people are talking around me” (Fiona). Although not verifiable as a causal link, both were perhaps a contributory factor towards a sense of the high level of workload brought about by a shift into collaborative space.

Senior leaders were acutely aware teacher workload was an area which needed to be addressed. Senior leaders had noticed it and had verification through the New Zealand Council for Educational Research (NZCER) workplace survey tool. They shared a sense that the shift towards collaborative approaches had been a contributory

factor. Length of time teachers were spending at school and spent together, were acknowledged as potential stressors. As senior leader Greg noted:

I think the collaborative environment has changed things in that regard in terms of how teachers are feeling. We don't want them to feel stressed and overworked and resent the collaborative environment. However, we also acknowledge those workloads and demands and pressures are now different from what they were.

Data from the teachers in *Quarryview* seemed to confirm some of this. Undoubtedly there was evidence of an increase in perceived time and workload as teachers moved into their new ILE. The absence of physical separation appeared to exacerbate this perception.

6.3.3.4 Teacher numbers

The Learning Centres at *Quarryview*, spilt into two smaller sub-communities, had been designed to accommodate the equivalent of six 'classrooms' of students and six teachers. As stated previously, at the time of research they were occupied by three teachers at one 'end', and two at the other (due to be joined by a third the following year). The 150 students were each allocated to a 'teacher group', determining primary responsibility. In some instances, particularly in 'inquiry time', learning took place across the wider (five class equivalent) cohort of students. More often, learning took place between the pair of teachers and the triad. Although the original intention had been to have five teachers working together, teachers and leaders realised complications to this – as much mathematical as well as relational – stemming from the number of teachers required. Where learning was more 'inquiry-based', with teachers running 'stations' and students rotating around them, the larger cohort and number of teachers appeared manageable. In this context, in more 'structured' areas of the curriculum such as mathematics and literacy, working across a team of three appeared about the numerical limit.

6.4 Tidewater: Challenging the status quo

As a 'new school' in the centre of a rapidly growing sub-division, *Tidewater* had charged itself with a mission towards challenging norms, attitudes, and practices, regarding what learning might look like in a primary school; hence, although only two

years old, participants considered it ‘innovative’. Primarily, this had stemmed from its approach to curriculum, a determination to personalise learning, and ‘doggedness’ on the part of school leaders to question predominant practices. Set in a single long building, students learned in ILEs accessed via an open, internal thoroughfare, running its length. The ILEs were each designed to accommodate 75-90 students with a team of three teachers. Students referred to their ‘learning coaches’ by first name. At the time of the study, two teachers, Leanne and Ryan, taught in the ILE under investigation. Leanne was also the Deputy Principal, a role that took her out of the ILE two days a week, (at which point Diane took her place).

The highly student-centric approach, with fluid approaches to timing of learning and co-responsibility for it, seemed congruent in principle with much of the discourse surrounding contemporary approaches to teaching and learning. Adoption of a pedagogical model, which necessitated a high level of teacher collaboration, formed the stimulus for continued focus on *Tidewater*.

6.4.1 Teaching together

6.4.1.1 The morning meeting

For leaders and teachers at *Tidewater*, adherence to values and beliefs of relationships, innovative practice, authentic learning, collaboration, and personalised learning were foundational to actualising their desired pedagogical approach. Translated into practice, this appeared to be inherently reliant on teachers’ ability to listen carefully, remain responsive, adapt readily, envisage opportunities, and to take risks. Above all, the nature of the approach appeared reliant on a significant degree of collaboration, not only teacher-teacher but also teacher-student and student-student. The morning meeting, observable at the beginning of each day, formed a critical practice.

Routinely, mornings at *Tidewater* began with students designing and recording the outline of their learning for the day. Although officially beginning at 9 o’clock, the physicality of the building meant students were in the ILE up to half-an-hour earlier than required. Accordingly, students and teachers were familiar with a relatively soft start’ to proceedings. Students collected folders (containing individual goals and planning sheets) from the box under the bench and settled down in the shared central area to begin their planning. For some, this was an individual exercise, although more

commonly students sat in twos or threes and worked together on particular elements of it, particularly important when a small group were arranging a shared project.

Three key ideas were employed to develop each day: ‘immersion projects’ (developing new concepts and themes), ‘target workshops’ (designed around specific content, mainly aimed at teaching strategies in mathematics and literacy), and ‘responsive workshops’ (for emerging needs or interests). Teachers displayed the day’s schedule on a large screen; it began relatively blank, and as discussions ensue over the next half-hour, it became populated with workshop titles, students’ names, and links to relevant resources. Detailed criteria for planning the day were displayed on a wall poster, forming the process teachers followed:

- Workshops should be given priority and planned in first;
- Follow-ups from workshops attended should be planned in second;
- Reflections about learning are completed Monday, Wednesday and Friday;
- Detail needs to be given in the planner, e.g. don’t just write ‘creative writing’, write in what you are actually going to achieve with creative writing in the time;
- If an activity has been missed or needs further time, this should be given priority for the next day;

As the meeting progressed, students completed their planning, then lined up to share it with one of the two teachers. This prompted a short conversation, teachers asking for more detail, highlighting gaps, making suggestions to join particular workshops, before stamping the planning, giving it the okay. A particular challenge appeared to be avoiding ‘cross-over’ and trying to be in two places at the same time. Teachers and students would negotiate this, and catch-up session prioritised for the following day. As Ryan noted, “that’s where you have to have good knowledge of where all the kids in the space are at in terms of their needs. That can be hard.”

The capacity to pre-empt and be responsive to students’ possible learning opportunities emerged as a challenging practice, demanding cognitive manoeuvrability, adaptability, skill, and a high level of pedagogical content knowledge. Ryan suggested it also required ‘prefiguring’; “what resources might I need? What questions might I need to ask? What questions might they ask?”

6.4.1.2 Students & teachers: Co-architects of learning

In addition to teachers running workshops, there was an expectation on students to do the same, as the following two examples illustrate.

In the first, Harrison planned what he referred to as an ‘interest-gauging’ cricket workshop before his club coach came into school the following week. The subsequent interchange between teacher and student was fairly typical of others observed during the study:

Ryan: How many were you looking at? And what was the time?

Harrison: 11.30, and about 6 to 10.

Lisa: Have you got names yet?

Harrison: No. Not yet.

Lucy: What’s your process? How were you thinking of getting the names?

Henry: I was just going to ask at the morning meeting who’d like to come to a cricket workshop?

Lucy: What happens if you get 20 people who decide they would like to do it? How might you organise that?

Henry: Ahh.

Lucy: Ahh?

Henry: I could run another workshop afterwards.

As the conversation, peppered with further questions, continued for a few more minutes, a solution was co-constructed, and the workshop added to the day’s schedule. Here, it was clear much of the learning was concerned with process, organisation and planning as it was with cricket. Articulation of process such as this was a consistent hallmark of practice at *Tidewater* throughout the research. Teacher voice, particularly noticeable through the morning meeting, reflected ongoing attention towards the reinforcement of process through a language of possibility, acknowledgement of the need to adapt, verbalisation of unforeseen changes, and an emphasis on students’ thinking through the process, rather than having it decided for them.

In the second example, Zeb and William had undertaken to run the morning's fitness session in the hall, located at the far end of the building. Heading down after the morning meeting, their peers arrived to find everything set up, ready to start. For the next twenty minutes, students ran, jumped, stepped and hopped their way around a circuit of activities; Zeb taking the lead with instructions, William recording with a GoPro. Noticeable during the session was the quantity and quality of feedback and encouragement that Zeb gave his peers. At the end, he congratulated them all on their work-rate, before asking for feedback himself. Teacher Ryan praised them for being "so well organised" and, once back in the ILE, recognising an opportunity to connect with some mathematical learning, wondered aloud how they might calculate how much running activity participants had completed. A while later Zeb and William were seen on their way back to the hall, tape measure and trundle wheel in hand.

6.4.1.3 *Keeping track*

With students planning their days with a high level of autonomy, keeping track of who was doing what, and with what impact, was a considerable focus for teachers. They accomplished this in several ways. Students were 'tagged' to a teacher, who had primary responsibility for them, especially when it came to Individual Education Meetings (IEMs); student-led conference held four times a year, where they shared evidence of learning and progress with their parents, shared samples of their writing and mathematics and discussed their projects. Teachers also offered suggestions of how parents were able to support their child's learning at home. Leading up to the IEMS, there was an expectation for teachers to review goals set at the last meeting, to gather standardised data, and work collaboratively to identify students making (and not making) gains.

On a day-to-day basis, each student had a folder for storage of documentation; in here, they kept their weekly planner, assessment items and their learner profile. These contained details of their current dispositional, literacy and numeracy goals. Holly, for example, noted her dispositional goal was to learn "to ask more questions to help me understand". She had decided she could accomplish this by "working with new and different people", and "noticing when I get confused". Her goal (students were encouraged to select a new one each week), had been selected from the *Tidewater* learner profile on the wall display, on 'my thinking', 'my learning', and 'my

relationships'. Under each category, the aim was to move along a continuum from being supported through self-managing, to self-directed. Others goals included:

- Do I take risks with my learning?
- Can I think around the problem to find multiple solutions?
- Do I lead when it is appropriate?
- Do I find fun in my learning?
- Can I meet the deadlines?
- Can I collaborate effectively with others?

Students also kept a running Google document, aiming to complete three reflections each week. They were encouraged to record their successes, challenges, and new learning. The teacher-team also utilised a set of Google docs for record keeping. One document, for example, related to 'target learners', where they kept an account of individual interventions. Another recorded achievement levels in mathematics, reading and writing.

The requirement for robust systems of record keeping when taking co-responsibility for a large cohort of students became quickly apparent at *Tidewater*. Although Principal Dave intended things to be "structurally loose", allowing for flexibility and emerging opportunities, it was clear that personalisation of programmes required a substantial backbone of structural integrity and co-accountability, belying the apparent level of choice and agency available to students. Less 'loose' perhaps – more 'different'. Furthermore, although teachers had no doubt that practices were scalable, they understood additional rigour might be required when introducing a third teacher.

6.4.2 Working together

6.4.2.1 The art of 'noticings'

Teachers were encouraged to step back and watch learning and activity in action, and they regularly articulated their 'noticings' to one another. At *Tidewater*, the term described transaction and exchange of information about individual students: how they were getting on; what they were getting stuck on; how they were progressing, and what they might need next. 'Noticings' were often recorded in Google docs and formed part of ongoing communication with parents. Many translated into subsequent

responsive workshops. The practice seemed, therefore, to be about ‘publically describing’ something they had observed; akin to providing an ongoing commentary, which teachers reflected, under previous spatial arrangements, may never have been articulated out loud. In this context, it appeared critical to the way multiple teachers could interact with, and impact on students’ learning. An approach reliant on responsiveness required ways of sharing information and observations so that colleagues were ‘in the loop’ and could respond accordingly.

To Ryan, the concept of ‘noticings’ was similar to that employed by his daughter’s early childhood teachers. He attributed value to growing the ability ‘to notice’. When a teaching student joined the team for a few weeks, the initial task Ryan asked her to do was to take a pen and notepad and, “write down everything you notice or questions you hear them talking about”. It was, as he reflected, a powerful if demanding practice.

6.4.2.2 “There’s osmosis going on”: Being present

Lucy was absorbed one morning, working with a group of students, developing understandings of camera angles for use in a forthcoming video-making task. She had positioned herself in the main teaching area with a group of about 35 students sitting on soft seating and on the floor close-by; utilising a mobile whiteboard to record ideas, and mobile TV screen to display exemplifying video clips. These clips were drawn from student’s work and illustrated examples such as wide-angle, close-up, and over the shoulder shots. Lucy and the group discussed how alternate camera angles might support their story-making project.

Meanwhile, on the other side of the ILE Ryan was assessing maths strategies and knowledge individually with a series of students. He sat at a large table in the art area, student to his side, facing towards Lucy’s group. When giving time for the student to think, and to consider their responses, he would glance up at Lucy’s group, observing the activity going on, before returning his attention to the student by his side.

For a task like this, a teacher might typically have chosen a location more discrete from ongoing activity in the room, a closed or acoustically separate space. Commenting on this scenario later, Lucy noted, “I think during the kids think-time he’s

been scanning and feeling in the loop about what's happening, so we can still have conversations later. Good multitasking!"

Similarly, Ryan suggested that "If I was locked away, one, you can't contribute and add value or notice what's going on, but also there's osmosis going on. You need to be present in the situation even if you're not wholly dedicated to it".

It seemed emblematic of the collective approach: a permissioned moment, and one that would not have been feasible without a high level of professional trust. Spatially the layout supported this to occur.

6.4.2.3 *Fluidity in space*

The ILE at *Tidewater* incorporated a central carpeted space, adjacent art area, large breakout room, two smaller ones (one designated the 'quiet writing room'), and semi-open 'teacher workspace'. Teacher rarely appeared to occupy their workspace, storing a few items on the shelves and otherwise leaving it available for student use. More often teachers were seen to sit on tall stools at a whiteboard table in the carpeted area, particularly at the start of the day, or when gathering students together. There was usually a mobile flat screen nearby which enabled teachers, and students, to 'cast' documents, videos, and images.

Students were used to having flexibility and access, not only in the ILE but also through the rest of the school; other spaces such as the library, hall, food technology area, science room, staff room, as well as other learning commons, were accessible via a broad and open central 'corridor'. Students recorded where they were working on a chart by the entranceway (generally following negotiation with a teacher). Within the ILE a variety of furniture and soft furnishings enabled arrangements aimed at different sized groups and individuals. Students referred to the table in the centre of the room, as the 'supported table', meaning, "you can go there if you need a bit of help" (Lily, student). Students often expressed spatial preferences, appearing to gravitate towards particular settings spaces: seeking quiet, comfort, a surface for a laptop, proximity to a teacher, or friends.

The fluid and porous nature of teachers' work translated as requiring mobility and visibility. Teachers generally negotiated where they were teaching for a particular session on the fly at the start of learning blocks unless specific set up was required. As

Ryan noted, if one teacher ran a workshop in the large breakout space, the onus was on the other to remain in the central area in order to “have a bit more of a look at what the others are doing”. There was no evidence of specific ‘ownership’ of space by teachers; “you wouldn’t want that here”.

6.4.3 Being together

6.4.3.1 Collaboration & trust: Spoken & unspoken

Activating the vision and approaches to learning established at *Tidewater* relied on a high level of teacher collaboration. It also necessitated a high level of relational trust, particularly to ‘get’ the approach to teaching and learning, and then to trust the quality of colleagues’ teaching, know that commitments would be actioned, that that observations were articulated, and that concerns would be raised. Arguably this would be the case across all of the schools encountered during the study. However, the nature of the pedagogical approach, the structures designed to support it, and the co-responsibility factor, appeared to demand a particularly high level of relational trust.

Curiously collaboration is sometimes hard to detect, appearing evident both in spoken acts of collaboration, as well as unspoken ones. Collaboration also appeared to include a range of ‘acts’: firstly, *planned* collaboration, such as working together to determine a strategy to best work with a particular student; secondly, *incidental*, such as that illustrated by a team teaching session. At *Tidewater* the morning meeting scenario often reflected teachers’ capacity to bounce and respond to one another’s’ ideas and trains of thought:

Ryan: I am still noticing some of you are just writing down filmmaking as everything that you’re doing this morning. It would be nice to see a little bit more detail in there. Are you writing scripts? Are you storyboarding? Are you finding resources?

Lucy: Or are you planning? Do you need to have some conversations about some ideas?

Thirdly, collaborative acts were also apparent in attentiveness to activity in the room, and awareness of colleague’s movements but without discussion taking place. This can be referred to as *inferred* collaboration. Ryan for example, when moving

through the ILE appeared cognisant of the students Lucy had already spoken to. Although unarticulated at the time he was conscious of not doing so as he stated, “you don’t want to be giving different messages, steering them off in a different direction”

6.4.3.2 Coaching for collaboration

Staff at *Tidewater* had developed interventions and support methods for when teachers when they found collaboration challenging. For associate principal Kate, this had primarily precipitated from “asking our teachers to do something they had not trained for...and finding some teams were not always working cohesively and needed time to make sense and unpack things”. In the view of the leadership team “ownership, acceptance and responsibility are going to lead to better outcomes”, hence recognising their own responsibility for developing teacher collaboration, at the same time as recognising it could be hard. As she noted, it was entirely consistent with the need for teams to “going through the pits and the norming and storming “(a reference to the Tuckman (1965) model of group development sequence). Hence, empowering teachers to raise issues with one another in a timely and appropriate manner was, to Kate, a key to successful ongoing collaboration. To Kate, it was instrumental:

We’re empowering people to drive their own successful relationships... to maintain them and sustain them and have the best outcomes for that ultimate goal of, making sure we’re doing the best we can for our kids.

This was a specific role for Kate; she had a day set aside for ‘coaching conversations’. Coaching took place in a small room; proximal to the staff and leadership areas, away from much of the foot traffic, with frosted windows, and relevant prompts on the wall.

Coaching was two-fold; firstly, it concerned building teacher capacity to have the ‘hard conversations’ with one other. In some cases, ‘sentence starters’ had helped, as did the opportunity for people to ‘practice the conversation’ with her first before tackling it with a colleague. For Kate, a vital learning had been to make sure she followed up with teachers post-coaching; checking in to find out, “how did that conversation go that you were preparing for”, in part to ensure it had occurred in practice.

Secondly, coaching helped build teachers' self-awareness about preferences, predispositions and behaviours. These included aspects such as understanding what triggers stress, behaviours when under pressure, personal strengths and areas of improvement, responses to feedback, and behaviours that may frustrate others. Importantly a clear strategy towards both parts of the coaching approach was the provision of models and scaffolds to support thinking and reflection, and in doing so, reinforcing previous professional learning. Kate supported teachers with several frameworks (displayed on the wall), such as the Whole Brain Model (Herrmann, 1999), Conditions of effective teacher teams (Troen & Boles, 2012), Circles of concern and influence (Covey, 2004), The Ladder of Inference (Argyris, 1990) Fields of conversations (Isaacs, 1999), and Growth Mindset (Dweck, 2006). As a whole, the emphasis was on noticing, understanding and applying.

Kate occupied a sophisticated space herself: between teachers, leader, group membership and relative hierarchy. As an initiative to pre-empt, and be responsive to relational challenges and capacity building opportunities, colleagues were appreciative of the initiative.

6.4.3.3 The task for leadership: Putting teams together

The final stage of fieldwork occurred in late November, a time where the leadership team, were well underway planning for the following year. A significant task for them was in determining teams for the following year, which, as Lisa noted, required, "looking at all kinds of dynamics", and for Dave, multiple "layers of complexity"; complexity resulting from the growing school context, intentions to provide ongoing continuity for students, and realities of staff turnover (some due to maternity leave). The leadership team were determined to make decisions on staffing and make-up of teacher-teams around the students' needs. However, they were also aware of growing number enrolments requiring additional learning support and were mindful of the need for experience working with them. Another factor was in determining whether to move teachers out of what they judged 'effective teaching teams', in order to bolster others. There was, they reflected, a possibility effectiveness had arisen from specific relationships, understanding of specific systems and structures, and ways of doing things in a particular micro-context. Pulling a teacher out of one

successful team did not necessarily provide any guarantees of transference of success to the next. The task appeared much like navigating through a relational soup.

Team selection in a context reliant on collaboration was of significant consequence and substantial complexity. Fundamentally the leadership team saw a need for complementary and collegial teacher relationships, and the capacity to be able to “challenge, but keep professional” (Dan). Bringing new teachers on board added to ‘unknown’ relational aspects, and presented challenges and questions around appointments. How do schools appoint for collaboration? The previous year the leadership team had employed two new teachers, in a process that had included making a presentation, a learning design task, completing a *Whole Brain Model* (Herrmann, 1999) assessment, joining morning tea with the staff, and an interview; much of which had included student representatives. Indeed, those ultimately selected were also the ‘first choice of the kids’ (Dave). Above all, it appeared that in this context relationships were elevated above other measures during appointment.

This factor emerged repeatedly. Furthermore, although the team acknowledged a rigorous appointment process, the provision of ongoing and available support structures, like that facilitated by Kate, were seen as paramount in developing a culture of learning and openness.

6.5 Conclusion

Chapter 6 has presented data and findings from Phase 3 of the study; collected through in-depth investigation at three of the Phase 2 sites with repeated visits across four months, totalling approximately three to four weeks spent with each of the teaching-teams. Field journal observations, interviews with teachers, students, and school leaders, documentation, and images were used as data sources.

Specifically, this phase aimed to examine:

- To what extent is the physical environment a factor influencing teacher collaboration in ILEs?

The work this chapter has contributed is in identifying spatially enacted or spatialised practices in collaborative ILEs. In particular, it leverages from the teaching

together, working together and being together, model, to describe where space, directly or indirectly, consciously or subconsciously, acted on practice.

The following chapter contains discussion centring on the four subsidiary research questions; they are considered in turn and discussed in terms of significant findings as related to the literature on the development of ILEs, collaboration, collaborative pedagogical practice, and contemporary pedagogy. It concludes with an assessment of the presence and positioning of collaboration as ‘happening, valuable, and difficult’ (Huxham, 1996).

Chapter 7 Discussion

The overall goal of the research was to further understandings of how teacher collaboration in New Zealand primary school ILEs was pedagogically and spatially, theorised, conceptualised, and enacted. This was achieved through design of a three-phase case study composing a broad overview, a series of snapshot studies, and finally a three in-depth studies. The previous three chapters have presented findings from each of these phases.

The discussion chapter is presented in four sections, centring on the four subsidiary research questions. Again this reflects the logic and progressive focusing (Parlett & Hamilton, 1976) of the study with its transition from ‘big picture’ context through to detailed and nuanced understanding of the phenomenon. To continue this logic the questions are next considered in turn. They are discussed in terms of the significant emergent findings and in relationship with the literature on ILEs and teacher collaboration. Following that, the chapter utilises the (Huxham, 1996) heuristic of ‘happening, valuable, and difficult’ to locate the presence and position of teacher collaboration in ILEs. Finally, the Terrains model is further developed to include the roles played by space and spatiality in teacher collaboration in this context. This then leads into the final chapter and the study’s overall conclusions.

7.1 Why teacher collaboration in ILEs: What are perceived rationales for spatial and practice change?

Identifying the rationales for the move towards teacher collaboration in ILEs laid the foundations of the study and platform for subsequent findings. Although the literature had revealed general notions regarding this educational change the study was able to more firmly ascertain local views and perspectives. Hence rationales for the move towards teacher collaboration and collaborative teaching in ILEs in New Zealand primary schools were found to connect to three specific ideas concerning (a) spatio-pedagogical alignment, (b) professional positioning, and (c) approach to learning. These ideas were broadly consistent with educational objectives articulated by the Ministry of Education (2011, 2012, 2016c, 2016d). Also they aligned with the OECD (2013) conceptualisation of a contemporary learning ecology, “less to totally transform the organisation of learning so that it is unrecognisable but to develop more complex,

flexible arrangements that accommodate the demanding aims that learning environments are today striving to achieve” (p. 72). At a local level, the findings portrayed a desire for congruence between pedagogy and educational space. Predominantly, there were two ways this could be articulated, driven largely by the role space was perceived to play and the extent to which it was believed it could help change practice. Hence the ILE initiative could be viewed as a ‘response to’ or a ‘catalyst for’ change; both can be read as with the deliberate intention of reducing the gap between pedagogical evolution and spatial design (Imms, 2018).

7.1.1 ‘Response to’, ‘catalyst for’, and ‘distance from’

One of the rationales given by participants was that the move towards teacher collaboration in ILEs was in ‘response to’ the requirements of contemporary pedagogy. In particular it emphasised a frustration with the spatial status quo, and viewed the development of ILEs as a way of spatially ‘catching up’ with teaching and learning. New spaces were therefore perceived to better foster pedagogical approaches enabling increased student choice or agency, teacher responsiveness, pedagogical differentiation, professional efficiency, and opportunities for presently unimagined alternatives. Here, principals of existing schools understood spatial change as one mechanism towards further enabling practice that incumbent teachers often already had in place or were working on. This was sometimes accompanied with practical strategies of prototyping, piloting, or ‘tryability’ (Rogers, 2003), to iron out issues as they developed.

In this regard, spatial change was viewed as a natural and logical maturation of educational progress, following a theory of cultural evolution (rather than systemic revolution), in that “emergence was based on already established foundations in the cumulative sequence” (Vago, 1999, p. 79). This evolution was seen to encompass the elements of teacher collaboration, and supported the idea that spatial changes with a shift towards collaborative ways of working, learning and inquiring into practice, helped teachers and schools move towards improvement. In this way, ‘space’ emerges as ‘opportunity’ for newly understood, or predicted realities, practicalities and daily routines (Lefebvre, 1991). This rationale was often used in connection with known and context specific teachers.

In contrast, the ‘catalyst for’ rationale spoke more strongly towards spatial change as a means to ‘nudge’ teachers’ practice towards contemporary pedagogies.

Here, space was viewed more as a prompt to action. The latter is not to be confused with the notion of ‘architectural determinism’, which tends to exaggerate the role of the physical environment over socio-cultural factors; depicting people as passive in their relationship with the environment, and ignoring their capacity to modify and create (Franck, 1984). However, the findings showed space created ‘impetus’ for changed practice; if sometimes portrayed as representational, “redolent with imagery and symbolic elements” (Lefebvre, 1991, p. 41), particularly concerned with breaking down physical or metaphorical boundaries and walls (Barnett, 2011; Halpin, 2007; Horne, 2004; Lee & Ward, 2013), and the change in students’ experience this anticipated. This rationale tended to be applied in association with generic and decontextualized ‘teachers’.

An additional theme running through the discourse can be explained as ‘distance from’, describing a deliberate move away from the ‘classroom’; reflecting an intention towards ‘resetting’ the ‘grammar of schooling’ (Tyack & Tobin, 1994), and incumbent ‘built pedagogy’ (Monahan, 2002). Hence the classroom materialised as a disagreeable object for many, and a euphemism for the unrequited; references to them dominated by terms of ‘single-cells’ or ‘egg-crates’, created for ‘industrial models of learning’, and analogic to ‘factory production lines’, strongly indicative of uniformity, efficiency, ‘stackability’, reproducibility, and mechanisation. This language usage was not entirely unexpected; participants were in the main innovators or early adopters (Rogers, 2003), with vested interest in successful spatial implementation. Neither is it a new observation (see for example Beardsley et al., 1973; Lortie, 1975; Weinstein, 1979 #536; Tyack & Tobin, 1994). It was here that space as representational (Lefebvre, 1991) was most prevalent, and for some participants, ‘classrooms’ invoked a particular unease.

As a built form, the classroom occupies an awkward middle ground in the current discourse. Here, Bernstein (1999) draws attention to ideological positioning in education, such that it is often differences or similarities that are emphasised, to the extent, “it is not unusual for one form to be romanticised as a medium celebrating what the other form has lost” (p. 158). In this case, firstly the assumption so-called ‘innovative’ practice are reliant on ‘innovative’ space quickly leads to bifurcation and reference to space in binary terms – classrooms or ILE – and a potential undervaluing of high-quality practice occurring in existing spaces (Mahat et al., 2018). Secondly, a ‘classroom’ may be one component of a broader nested assemblage within an ILE

(Dovey & Fisher, 2014). Thirdly, the ‘production-line’ analogy of classrooms required caution. It assumes the roll-out of classrooms and the Industrial Revolution were concurrent (Carl, 2009), thus conveniently compressing a hundred years of history into a much shorter timeframe (it is worth remembering that Henry Ford only began rolling out the Model T on the first moving assembly line in 1913). Finally, it assumes that previous spatial innovation has been lacking; rather than iterated on long-held ideas evidenced through, for example, the work of Dewey (1966), Malaguzzi (1987), and Montessori and Holmes (1912) who have long held spatial differentiation of central educative import.

7.1.2 Microcosms of globalisation

Inherent through the findings was the notion of learning situated in ILEs offering, “a better representation of the nature of the world that our kids are going to be entering” (Principal Brett). Participants frequently connected this with concepts of immediacy and access; information and knowledge flows; diversity and differentiation; and socialisation and connections, each afforded technologically, spatially, and humanly. Here, notions of mobility, openness, flexibility, and agency become mobilised; they reinforce the notion that occupants may expect to experience significant alterations to everyday life, bringing consciousness to some behaviours in schools, which, in the past may have been discouraged. ILEs might, therefore, depict a closely mirroring microcosms of global activity, building on spatial concepts such as networks, flows, hubs, and nodes (Castells, 2010; Edwards & Usher, 2000; Monahan, 2005; Scholte, 1997; Swaffield & Primdahl, 2006; Usher, 2002); with school environments providing miniature-scale versions for neophytes. The logic is such pedagogical space may acclimatise learners to more ably navigate this ‘space of flows’, where “material arrangements allow for simultaneity of social practices without territorial contiguity” (Castells, 2010, p. 295).

As Couch (2018) assesses, such discourse leads to the emergence of a particular ‘social imaginary’, a broad understanding of how people imagine society (Anderson, 2016; Taylor, 2004), “with a primacy placed upon the learner’s physical and digital environments” (Couch, 2018, p. 122). It is a stance utilised by critical theorists in evaluating contemporary political policy, eventuating in the portrayal of contemporary educative purpose as neo-liberal, with emphasis on cosmopolitanism (internal

globalisation), and technologies of citizenship (Beck, 2002; Duhn, 2006). Nevertheless, at the same time, globalisation also reemphasises the importance of locale and place, particularly concerning cultural identity, social organisation, political representation, and primary source of experience (Castells, 1999). For children, in particular, connection with the school as a place, and the significant adults within, form an essential component of belonging and attachment (Bergin & Bergin, 2009; Hendrickx et al., 2016; Kesner, 2000; Riley, 2009).

7.1.3 Ethics, responsibility, and care

Although broadly influenced by global trends in learning environment innovation, and by themes surrounding contemporary approaches to teaching and learning, at a local level what was particularly evident was a concern for spatial and professional change under a school improvement agenda. Anticipation undoubtedly plays a role: in this regard strongly aligned with notions of uncertainty and complexity and, “assumes an active and critically reflective interaction with futures that are unknowable” (Amsler & Facer, 2017, p. 1). Also, that anticipated spatial changes would enable the types of change principals were envisaging. In this study, however, anticipatory factors were supplanted by the immediate, known and grounded in the ‘here and now’. Hence, although references were made to a global agenda regarding employment, technological capacity, and ‘unknown futures’, of more immediacy were the development of engagement, agency, opportunity, and the ‘humanisation’ of the learning experience. Where schools had prototyped and trialled spatial and pedagogical change for example, not only was it with the intention of professional transition, but also because they wanted students to engage in the experience now, rather than waiting several years for it (and possibly missing out altogether).

Similarly, although participants demonstrated mindfulness towards change and knowledge, new arrangements would result in triggering unforeseeable issues. Nonetheless, their motivation was concerned with doing the ‘right thing’. To this end, when principals and teachers spoke of their students, community and context they factored spatial change as one means by which to activate steps towards educational and conditional improvement, and did so from a more proximal perspective of ethics, care and responsibility, where responsibility is “to act in accordance with our knowledge and beliefs about the needs of our charge” (Osberg, 2010).

The suggestion that a rationale for a spatial change in schools stems from a schema of ethics, care and responsibility offers an alternate perspective to that captured under the more familiar agenda of globalisation and employability. Although the latter emerges from a familiar discourse, it struggles from occupying an unknowable and incalculable position (Osberg, 2010). For Osberg (2010), drawing on Jonas (1984) the ‘taking care of the future’ discourse presents a paradoxical assignment. On the one hand ‘care’ implies a “teleological or ends-driven understanding of action which requires that we know in advance what it is we are supposed to be doing to act in an ethical manner” (p. 158). On the other, “that we can no longer rely on rationally informed choice to make ‘caring’ decisions about the future – because our decisions cannot be reduced to calculations alone” (p. 158). ‘Doing something’, in this case, developing collaborative teaching practice in ILEs has been criticised for lacking a formative empirical base of data illustrating that ‘it works’ (Hattie, 2015a).

Moreover, ILEs and open-plan educational buildings are often the source of comparison; in the main, the latter ‘didn’t work’ (Cleveland & Woodman, 2009). So the comment from one participant, (reflecting several colleagues’ views), “what’s the consequence of not doing it” (Douglas), presents a something of a conundrum, as it overlays professional responsibility and ethics of care, with politics and policy. As Osberg (2010) frames it, the idea of responsibility concerned with education and politics is a complex issue:

If we care about the future, it matters very much that we do the “right” thing... it is important that we act in a way that will indeed positively influence the future, rather than that we act in a way that will have a negative effect or that we refrain from acting at all (which is nevertheless taking a position that can have a negative effect). (p. 157)

To Osberg (2010) the response lies in adhesion to vision, strategy and planning, in order “to act in a way that we think will meet the needs of an imagined future” (p. 162), even though inherently this is one of many possible futures. Principals’ decision-making is therefore necessarily driven through evaluation of consequences, collaboration with stakeholders, values of leadership, engendered in, and with the trust of teachers and community (Hallinger & Heck, 1998; Hammersley-Fletcher, 2013; Male & Palaiologou, 2015; Tschannen-Moran & Gareis, 2015). The latter is critical in

the New Zealand context, where, under a model of self-governing Boards of Trustees, schools make their own choices about the style of learning environment they deem suitable (Benade, 2017b).

7.2 What are the perceived implications of teacher collaboration in ILEs?

Implications emerge as direct or indirect results from a course of action, enforced or voluntary. In this case, the change to place, which emphasised if not required the need for collaboration, held particular implications for teachers, extending significantly beyond their teaching (professional) practice, and into personal and interpersonal domains.

7.2.1 Being a teacher in new spatio-pedagogical settings

A considerable implication for teachers practising in ILEs, specifically where the emphasis was on a collaborative rather than cooperative approach, was in the commensurate shift to aspects of their work; not necessarily in terms of wholesale change, more in ‘dialling up or down’ particular aspects of it. Hence the findings show that with the construct of ‘being a teacher’ in a collaborative ILE, particularly where the emphasis was on innovative practices, came conceptual repositioning, refiguring and relinquishment; concerning practice, place and people. Most obviously, ILEs repositioned teachers within school space, in contrasting assemblages of space, with, rather than adjacent to colleagues.

Furthermore, repositioning was accompanied by removal of the ‘front’ of the classroom, with spatial configurations inviting teachers to teach from a multitude of locations. Repositioning also manifested through consideration of teachers’ role and locus of control, philosophically justified through reference to student-centred approaches, and pedagogically often locating teachers as response agents and creators of opportunities for students to ‘opt-into’, rather than purely instigators and initiators of learning. It was often accompanied with role relanguaging to ‘coach’ or ‘advisor’ (Benade, 2017c; OECD, 2013). Moreover, teachers invariably found themselves as part of a team, placing themselves near colleagues, deprivatising their practice, in a way previously unexperienced, ostensibly repositioning teachers in workplace, relations to colleagues and students.

Refiguring, manifested through a requirement to determine pedagogical approaches in ILEs, with decision-making, pedagogical approach, now subject to team discussion and dialogue. Often this was undertaken in conjunction with a developing or ‘dialling up’ an emphasis on student agency, dispositional learning, digitisation, responsive practice, flexibility, interdisciplinarity, personalisation, or reorientation of the curriculum.

Relinquishment most clearly manifested through the absence of a relationship with a ‘classroom’, along with accompanying privacy, control, and ownership. Also, through altered relationships with students in the ‘class’, and a need to share responsibility, preparation, assessment, parent communication, organisation and control.

A key difference revolved around the idea that ‘being a teacher’ in ILEs was ‘more complex’ than in traditional classroom settings. Often this complexitisation was attributed to perceptions of increased student numbers, increased activity in situ, reduced downtime, shared jurisdiction and decision-making, increased time with team members, and the desire to retain a degree of flexibility. It was also frequently associated with additional cognitive load. Here cognitive load was the feeling of being overwhelmed by the volume of simultaneous activity in the classroom, with that “imposed by one task interfering with performance on the other” (Sweller, 1988, p. 282). For Feldon (2007), this was strongly associated with novice teachers; here perhaps also related to the (Howell, 1982) model of Conscious-Competence, in which experienced teachers found themselves, at least temporarily, thinking more about their practice than they had done for a while.

Complexity was also due to relative starting points. Those teachers in new school contexts were perhaps better placed to begin from a pedagogical position, which laid out, (or co-constructed), key principles of values, aspiration, expectation, systems, practice, and professional role. For those teachers in transition into ILEs often this work was done in parallel to existing approaches, and subsequently overlaid upon them; sometimes creating a duality between articulated intention and realised practice (Argyris & Schön, 1974).

The broad implication of repositioning, refiguring and relinquishment, is that being a teacher under these circumstances is different to being a teacher in a traditional classroom setting – neither necessarily better nor worse, easier or harder – just,

different, but a difference that requires understandings, knowledge, skills and competencies, themselves either modified or newly acquired (Benade, 2017a; Lackney, 2008; Wood, 2017a, 2017b).

7.2.2 Being with others

The development of collaborative ways of working invited, nudged, or pushed teachers, to enter into new relationships with practice, colleagues, and innovation. The process of pedagogical translation stimulated them; where pedagogical translation forms the activity of understanding, conceptualising, and reifying a form of collective practice, resulting in extended, amplified, or augmented possibilities. In order to achieve this, teachers needed to navigate and negotiate their way through myriad decisions, logistics, and organisational components; in this way, to arrive, (at least temporarily), on a preferred approach. ‘Temporarily’, as much of the data pointed towards the idea of formation, deformations, and adjustment of practices occurring on an ongoing basis, much like the notion of ‘serial redesign’ highlighted by Thomson and Blackmore (2006). This necessity to navigate and negotiate became associated with the influence of teachers’ prior knowledge, bias towards particular beliefs and values, variation in interpretation, and readiness for change (Sinnema & Aitken, 2013; Spillane et al., 2002), as well as teachers’ willingness to engage in the collaborative process (Hansen, 2009).

The findings demonstrate expectations on teachers to draw upon appreciable levels of willingness, and also, adaptability, acceptance, empathy, and resilience. Precisely: willingness to adjust, modify, collaborate, relinquish, and learn; adaptability to alternate ways of working; acceptance of challenge, change, ambiguity, and others’ perspectives; and resilience in the face of critique, failure, and conflict. Although these might be desirable qualities for any teacher, they appeared accentuated by the need to work closely with colleagues. Adaptation was both professional and personal.

As a conceptual cluster these added to the long list of ways teachers’ work might constitute ‘emotional work’, the impracticality of disassociating emotion from practice; acknowledging the significant emotional labour, understanding and practice required in everyday interactions (Hargreaves, 1998, 2001). Moreover, Datnow (2018) identifies teachers’ experience of educational reform may “provoke feelings of inspiration, excitement and positive energy” and equally, “fear, anxiety and frustration” (p. 157),

hence the need to acknowledge emotional aspects of work, especially where professional collaboration is concerned.

Each of these emotions, and others, were encountered during the study. They were particularly associated with professionalism and collaboration. They emphasised the human experience of working, teaching and being together in collaborative situations. Much like Datnow (2018), the findings of this study also echoed the emotional geographies outlined by Hargreaves (2001). Teachers experienced personal geographies through professional and interpersonal connections with colleagues; moral geographies were often in evidence through shared goals and sense of accomplishment; professional geographies evidenced through aspects of professionalism which enhanced the learning experience for students; and physical geographies experienced through proximity, openness and deprivitisation, instrumental in building trust, relationships and professional learning.

Critically, the physical geographies encountered in ILEs directly resulted in higher levels of teacher-teacher interaction and dialogue between those engaged in joint activities. As such, the findings demonstrate heightened expectations of ongoing work with or alongside colleagues, given close physical proximity, elevated leaders' desire for teachers' self-knowledge (Neisser, 1988), or self-awareness; specifically regarding innate tendencies, strengths and weaknesses, beliefs, mindset, and behavioural predispositions. It prompted heightened levels of teachers' situational awareness, consideration towards the nature of interactions, and social sensitivity towards how actions might impact on others. It is consistent with the growth of emotional intelligence (EQ) as a field of the behavioural sciences, and a desirable, learnable workplace competency (Dolev & Leshem, 2017; Goleman, 2006; Zeidner et al., 2004). Although an assumption might be that teachers already possess high levels of EQ (Dolev & Leshem, 2017), the act of 'naming it', generated a register of language from which to leverage. Collaborative arrangements contributed a forum in which this self-reflection and pre-emptive articulation to colleagues (supported by professional learning, shared language, and cultural norms within which it was safe to do so), was encouraged, in so doing developing collegial understanding and relational trust (Bryk & Schneider, 2003; Vangen & Huxham, 2003), and potential areas for self-development. In this study, EQ demonstrated by teachers in the research often related to care and

concern for colleagues' wellbeing, especially connected to stress, wellbeing, and familial circumstances.

Similarly, the research showed teachers' understanding of desirable attributes, particularly dispositional, when working in ILEs. These were often accompanied by levels of self-belief, (confidence in one's abilities or judgements), particularly associated with self-efficacy and self-concept (Pajares & Schunk, 2002). Both were instrumental when collaborative settings aim to leverage knowledge, expertise and capacity from all participants. As has been previously noted, the personal qualities of adaptability, flexibility and openness, reported in the literature echoed in the research. Teachers had strong ideas regarding what they valued in terms of attributes, and could quickly identify colleagues' positive qualities, if somewhat reticent in sharing their own. Together, self-knowledge and self-belief formed fundamental elements of the contribution towards collaborative scenarios. However, self-revelment formed an additional component of risk featured by collaborative circumstances – risk of self-revelment, as well as the need for personal vulnerability.

Conflict, or fear of conflict, held particular concerns for teachers, specifically concerned with 'fallout' resulting from unintentional upset caused to colleagues, to the extent it was sometimes avoided (in one instance requiring mediation from school leaders). Instances of conflicts or disagreements had reportedly resulted less from educational discourse, more from the cohabitation of ILEs; concerned with aspects of maintaining collegiality and working relationships. Although teams had often developed pre-emptive agreements containing behavioural norms, references to them on an ongoing way were limited, and small concerns frequently went unaddressed. It was particularly evident in situations with dominant team leaders, where teachers sought to concur, setting aside their doubts and misgivings (Johnson & Johnson, 2009). An exception was at *Tidewater*, where coaching mechanisms encouraged teachers to engage in conversations with one another and provided support and practice with which to do so. Techniques such as those presented by Johnson and Johnson (2009) such as skilled disagreement, motivation to improve understanding, perspective taking, reformulation of problems, commitment to implementation, and willingness to change attitude, had not materialised in professional learning, but seem essential in the collaborative problem-solving toolkit.

7.2.3 ‘Being collaborative’

In my opinion, it’s collaborative because we are working together. (Bev, Teacher, *Lakeside*)

As exemplified above, collaboration frequently became a euphemism for much of the joint activity teachers engaged in, rather than an explicit component of it. The misappropriation, (although not intentional), is familiar in the discourse (Dillenbourg, 1999; Forte & Flores, 2013; Gajda, 2004; Kelchtermans, 2006; Vangrieken et al., 2015; Wood & Gray, 1991). Hence by implication, it would be easy for a teacher to consider they had worked collaboratively in an ILE, transfer to another school, and be faced with an entirely different proposition.

Although there was clear evidence of collaboration occurring between teachers in ILEs, investigation revealed a significant underemphasise on the interactive, collaborative process, in comparison with understandings of antecedents and desired outcomes (Ring & Van de Ven, 1994; Thomson & Perry, 2006; Wood & Gray, 1991). Consequently, teachers found it relatively straightforward to articulate in general terms why they might collaborate, yet challenged to explain specifics of tasks they collaborated on, or how they went about it, in essence omitting literacy of process components. To Thomson and Perry (2006) and Wood and Gray (1991), the collaborative process contains elements of governance, administration, autonomy, mutuality, and norms of reciprocity and trust. Examples of these were evident through the research but not discussed in such terms. Specifically:

- Governance – through information sharing, negotiation, consensus reaching, and pre-emptive agreements;
- Administration – through formal and informal information flows, defined roles and responsibilities, common databases, meeting routines, and both positional and emergent leadership;
- Autonomy – through opportunities for participants to make a contribution, utilise strengths, and accountability;
- Mutuality – through giving up aspects of practice to support the collective, and professional learning exchange relationships;
- Norms of reciprocity and trust – through relational trust, openness, honesty, personal regard, and integrity;

These examples provided evidence of practices, which supported the collaborative process. However, without clearly articulated goals, or a guiding process, they appeared only to do half a job.

Some of this appeared to be due to an overall emphasis and expectation on teachers' being collaborative' – dispositionally, behaviourally, relationally, collegially, and continually – rather than 'understanding and engaging in the process of collaboration'; task-specific, and problem-focused over the short-term – and one of several forms of work they could engage in together. Where teachers could articulate specific collaborative activities, they often concerned specific school events, out-of-school trips, or time spent setting up ILEs at the beginning of the year. Approaches to learning were also often described as collaborative but had more in common with cooperation or coordination. As a result observations and interviews in-situ demonstrated it was challenging to identify the beginning or end of the collaborative processes in action; joint activity seemingly 'stuck in the middle' somewhere, on an ongoing basis. The net result was that teachers lacked 'endpoints' on which to reflect (and celebrate) the collaborative process in action.

This research would suggest there is potential for a problematising approach towards collaboration in order to focus attention on the purpose for collaboration in the first instance. Where teachers shared responsibility for students, there was a greater need to and evidence of problem identification and setting. Often this was precipitated by specific students' needs, planning for the following day, reflecting on progress, analysis of data, evaluation of impact, and transaction of information from external sources (parents, support services). Hence the 'problem', even though this specific language was not applied, was constituted around the student's learning needs. Although 'problematisation' as a concept might itself be problematised (Talukder & Samuel, 2018), it does provide an attractive frame of reference concerning collaboration in schools and ILEs in particular. Specifically, if the purpose of the collaboration is to bring people together to achieve something in a way that extends beyond the capacity or vision of individuals (Gray, 1989), it is useful to consider the 'problems' (or perhaps 'opportunities'), of most import for teacher teams to engage with. To Freire (1972) problematisation, "regards dialogue as indispensable to the act of cognition which unveils reality" (p. 56), in a critical pedagogy which utilises problems and challenges as

a medium for transformation. Examination is required to discern whether such an approach may lead to sustained pedagogical change in collaborative situations in ILEs.

7.2.4 ‘Being on the same page’ – the need for proximities

The suite of emotional geographies identified by Hargreaves (2001), along with evaluations of collaborative process elements by Wood and Gray (1991) and Thomson and Perry (2006) both point to value and gains to be made through professional closeness, and challenges precipitated by professional distance.

A third way of articulating closeness and distance concerning collaboration (particularly in the context of inter-organisational collaboration), is in terms of spatial and non-spatial proximities, or; “being close to something measured on a certain dimension” (Knoben & Oerlemans, 2006, p. 71). Knobens and Oerlemans (2006) assessed geographic, technological, and organisational proximities (encompassing cognitive, institutional, cultural, and social proximities), to be of equal import. Here, the term *geographic* is employed to describe physical and spatial closeness, whether absolute or perceived; *technological*, to describe technological affordances, access, and knowledge of how to use them; *organisational*, to describe beliefs, values, rules, routines and behaviours. Hence, in failing to recognise them, “it might be difficult to harvest the gains of such an alliance” (p. 87). The Knobens and Oerlemans (2006) evaluation, as with many researchers working in the field (see for example Amin & Wilkinson, 1999; Boschma, 2005; May, 1998; Oerlemans & Meeus, 2005), tends to associate proximities with those between organisations, often with innovation in mind. The findings of this research suggest there is also value in ascribing similar criteria across teacher teams; illuminated through findings on the importance of teachers’ being on the same page’.

The likelihood of teachers being able to engage in successful work together was reliant upon alignment and proximity. School culture, particularly that explicitly valuing collaboration, and including collective expectations, shared vision and values, and cultural norms in which to operate, were critical to actualisation and providing a foundation of organisational proximity upon which to build. Within ILEs this was further cemented through clarity of pedagogical intent, established organisational structures and routines, shared understanding and fluency in digital systems, co-

constructed norms and expectations of one another, shared understandings of roles and opportunities for autonomy, and shared language.

To this end, whether about the language of vision, values, learning, curriculum, disposition, space, systems, or routine, observations and interviews revealed the critical centrality of shared language in ILEs in shaping organisational proximity. Where local language was utilised and maintained by teachers, it provided structures and frameworks through which to support teaching and learning, providing continuity and reassurance to students and reducing pedagogical dissonance between teachers.

Critically, this helped to alleviate some of the tension between previously relied on implicit or tacit knowledge (Howells, 2002). It helped teachers to ‘sense-make’, co-construct understandings, and identify and correct misalignments. Likewise, teachers’ engagement in ‘out-loud’ thinking, articulating ‘noticings’ and incidental discussions – giving a ‘meta’ quality to shared work – performed an essential role in fostering alignment, participation, and mutuality. It translated into a desire for much of what has remained implicit in the teaching profession, often enabled through physical isolation, to become implicit in collaborative situations. Such explicitness also helped to foster trust and shared purpose, which, along with informal discussion, improved learning and collegiality.

The importance of technological proximity emerged through the way online digital tools were employed to support collaborative settings; often made most apparent where this was not the case. Arguably the construct of an ILE is reliant on implementation of digital affordances to support contemporary approaches to learning (Cope & Kalantzis, 2008; OECD, 2013; PuenteDura, 2010; Wenmoth & Ham, 2010); an assumption being teachers have a high level of digital fluency and capacity to cause learning utilising ICTs. However, for some teachers understandings of, and the use of digital tools in teaching was at a rudimentary level, with reliance on one colleague to problem-solve and provide ongoing in-situ professional learning; creating a barrier to the adequate provision of digital opportunities for students and ongoing building of student agency. In contrast, where digital systems were employed, and leveraged, particularly those aimed at promoting student agency, they hold potential to further the extent to which teachers could enable learning.

To Knoben and Oerlemans (2006), the importance of proximities was in recognising where ‘closeness’ or ‘distance’ was present. In ILEs, ‘being on the same page’, was essential to collaborative practice. Hence, the lens of proximities firstly helped highlight and label these gaps and misalignments; it gave language to presence and situation. Reversely, where proximities had been achieved and were recognisable, they appeared to emanate reflexive qualities, furthering collective understandings and efficacy.

7.3 What practices (and approaches) have been developed and enacted by teacher-teams occupying ILEs, and to what extent are they collaborative?

Identified through the research (and described extensively in Chapter 5 and 6), were heterogeneous sets, and subsets of enacted practices pertaining to aspects of pedagogy, organisation and logistics, space, and relationships. Together these provided frameworks, structures, settings, processes, and activities, which, for inhabitants in a particular ILE, determined how teaching, learning, routine, and professional engagement would be enacted on a day-to-day basis. These created local assemblages of collaborative practice, contextualised according to school priorities and parameters, emergent through dialogue and discussion, and framed by local and international educational discourse.

Through this, the findings have revealed much about teacher practices in the case-site ILEs. Supplementing the initial research aims, they help position the research to be able to respond to the idea that without sufficient evaluation, professional learning, and teacher training, history may repeat itself and ILEs may well suffer the same demise as open plan classrooms of the 1970s (Imms, 2018). As Imms (2018) has described, many of the justifications now mirror those articulated previously. Attention is therefore needed to practices that help teachers teach better. To Imms (2018), what is required is “work that focuses on helping teachers make the most of these environments” (p. 11). The following practice components, revealed through the data, form specific examples for such focuses. Specifically they also illustrate the role of collaboration in arriving at, designing, and sustaining them.

Teachers are well used to creating assemblages for learning; typically organised, and acting on a professional obligation to create an inclusive, safe, stimulating and

purposeful environment for their students (Nias, 2002). The simple difference in collaborative ILEs is that instead of an individual teacher setting the agenda, it is the responsibility of a teacher-team to develop, manage, address issues, maintain, and adapt the assemblage. The team nature of this presents specific challenges, especially given the multidimensionality, simultaneity, immediacy, unpredictability, publicness, and history present in classroom ecologies (Doyle, 1986). Hence, resultant assemblages were each markedly different – hallmarked by approaches to collaboration, team teaching, structure, experience of teachers, and overall pedagogical intention.

The differences in enacted approach highlighted several points. Firstly, and unsurprisingly, there was no ‘right answer’; approaches were highly contextualised, relating to local time-lines and goals, resulting in localised ‘weighting’ according to priorities and needs. Secondly, approaches related to whether or not the school was existing or new. In the former, it was more likely that teachers had existing practices they could, and wished to transfer, coupled with the relative urgency of doing so with a full cohort of students, in some cases amplifying the perceived requirement for structure. In the latter, teachers were reliant on practices from their previous schools, or more often, engaged in establishing new ways of working, often coupled with an opportunity to reconceptualise or ‘unbundle’ familiar practices. Thirdly, approaches reflected the extent to which time and professional learning interrogated possibilities and intentions; in some cases coupled with prototyping, time, and space, to trial, reflect, and improve, on a limited basis (Rogers, 2003). This preparation increased teachers’ level of readiness for spatial change (Armenakis et al., 1993; Holt et al., 2007; Osborne, 2016). Fourthly, enacted practice appeared to be impacted by teachers’ prior knowledge and experience of operating under an educational model characteristic of ‘21st century learning’. Although teachers often associated ILEs with being more spatially aligned with contemporary pedagogies, theoretically this had not precluded or prevented their enactment beforehand. However, especially regarding the use of ICTs, this did sometimes appear to be the case.

The resultant assemblages encountered in this research, although not exhaustive, begin to enable classification. Before doing so, however, it is important to recognise some precursors. Whether explicitly or implicitly addressed, assemblages appeared to have resulted from teachers’ consideration of four factors. Their subsequent enacted practice emerged as a composite, or combination of (a) their intended pedagogical

approach, (b) their understanding of the role collaboration would play, (c) their decisions regarding if or how teachers would teach together, and (d) the structural components they adopted or developed to support practice. Each required a level of recognition, knowledge, and decision-making to activate. Descriptions follow in the next sections.

7.3.1 Clarity of intended approach

The first factor related to teachers' intended approach. Teachers occupying ILEs faced a substantial decision set; in particular, and frequently most foremost concerning 'what will learning look like here?' and 'how will it be organised?' Their response was influenced by whole-school philosophy, belief, and vision for teaching and learning. In line with the literature on contemporary curricula, these were often driven by aims to increase student agency, self-management, and choice (not new ideas but perceived by participants as more achievable in ILEs): pedagogically, to increase engagement, differentiation, responsiveness, efficiency, and alternatives. One distinct variable within this was the extent to which goals regarding what teacher-teams were aiming to accomplish in ILEs were clearly articulated and understood. Often these were made at the school level but became subject to interpretation at an individual team level. Where there was clarity and understanding, there was a higher likelihood that enacted practice would reflect articulated school aims and objectives (Atkin, 1996).

Another variable was teachers' relative prioritisation; evidence suggested that sometimes the more pressing need for organisation and structure in an ILE could undermine broader pedagogical intentions. The focus for teachers sometimes emphasised the day-to-day apportionment of tasks, student groupings, teacher responsibilities, and scheduling, reflecting a desire for teachers to be seen as prepared and organised, echoing a similar finding from Saltmarsh et al. (2015). Reification of approach, therefore, required balance between, and leadership through, practicability and aspiration, familiar and novel, comfort and discomfort, immediacy and longer-term goals.

7.3.2 Leveraging collaboration

The second factor related to the way opportunities for collaboration, and opportunities afforded through collaboration, were recognised and leveraged. Aims

articulated by teachers translated as belief a pedagogical goal was achievable through teacher collaboration in a way considered previously less than imaginable (notwithstanding what is imaginable innovation to one may differ from another (Rogers, 2003) but required specific thinking about collaboration beyond that of merely ‘working together’. It needed to extend thinking beyond merely having more teachers.

On its own, having more teachers itself did not by default change practice, enhance learning for students, or achieve a specific outcome. Instead, encountered practices appeared to rest on the perceived benefits of having ‘more of’ something as a result. Attributes such as expertise, strengths, resources, consistency, time, variation, relationships, opportunities, space, visibility or access appeared between ‘more teachers’ when networked. It appears a critical connection, in that they are the attributes that lead to ‘relative advantage’ (Rogers, 2003), ‘collaborative advantage’ (Huxham, 1996) – with the view towards enabling more agency, engagement, differentiation, responsiveness, efficiency, and alternatives. Explicit recognition and articulation of these appeared, therefore to form a useful strategy for teachers, if not overly encountered during this research. Once recognised, decisions could then take place regarding what leveraging practices were required to maximise opportunities afforded through collaboration; notably, which would support and reflect whole-school philosophy, belief, and vision for teaching and learning.

Here leveraging practices refer to those practices that amplified pedagogical opportunities for learning and teaching. For example, student agency was leveraged through combinations of:

- Structures of common language through which to describe learning, space, routine and expectations.
- Opportunities for agency to be exercised through making choices about learning, location, and task response.
- Access to online supports such as learning objectives, exemplars, resources, and feedback loops.
- Personal and independent inquiry.
- Access to multiple adults.

Again, responsiveness was leveraged through:

- Strong pedagogical relationships.
- Physical visibility.
- A culture of learning and acceptance towards mistake-making;
- Variation of approach.
- Teacher time set aside towards discussion about individual students;
- Accessible adult and peer expertise.

It is perhaps, an original way to consider collaboration. Often, practice was being put in place but in the absence of understanding what was being leveraged. Hence an exploitable link is found retrospectively between *recognition* and *leveraging practices*.

7.3.3 Activating co-teaching approaches

The third factor related to decisions regarding whether and how teachers would teach together; theoretically, co-teaching presenting a means to leverage expertise, pedagogical variety, opportunities, space, and time. Co-teaching was commonly referred to through the findings; predictably, as there are repeated assumptions that team-based approaches are enabled and ensuing in ILEs (Alterator & Deed, 2013; Campbell et al., 2013; Deed & Lesko, 2015; Deed et al., 2014; Saltmarsh et al., 2015). Given its importance in the context of ‘teaching together’, though co-teaching, therefore, merits specific examination. The distinction between collaboration and co-teaching is an important one; where co-teaching presumes collaboration, the reverse is not necessarily the case. Often co-teaching appeared to reflect a more coordinated approach.

Co-teaching approaches are distinguishable by the roles teachers adopt, task engagement, relative responsibilities, and their relationship with one another. It should not be a surprise that those encountered during this research resembled those presented in previous literature; against a categorisation of teacher role permutations (based on presence, positioning, planning, and proximity), the degree to which alternative approaches are possible is limited. Inherently, individual teachers can only be either: static or mobile; following personal, peer, or joint learning planning, or not; alone or with a colleague(s); engaged in explicit instructional teaching, observing a peer, available to respond to students, or engaged in another activity, (such as assessing an

individual student, data collection, pastoral, administrative) (see Table 7.1). Co-teaching is therefore actualised as a sum of parts, which translated, become known as station teaching, parallel teaching, and one teach/ one assist (see for example Benninghof, 2012; Friend & Bursuck, 2009; Villa et al., 2008).

Table 7.1. Teacher roles in co-teaching scenarios in ILEs

Category	Individual teacher role				
Positioning	Mobile (fluid)		Static (fixed)		
Proximity	Alone	With colleague		With colleagues	
Presence	Explicit instructional teaching	Supporting a colleague	Observing a colleague	Available to respond to students	Engaged in another activity
Planning	Own	Colleague's	Joint	None	

Note. Summarised from interview, group-interview & observational data.

Three things are of interest in the findings. There was a noticeable lack of teacher knowledge with which to describe co-teaching alternatives. Given the prominence of co-teaching in the discourse surrounding ILEs, and centrality in the enactment of practice, this was surprising. However, the ILEs literature has rarely ventured further than describing appropriate approaches as ‘team teaching’ or co-teaching’, with details not sufficiently fleshed out. Explicit knowledge and articulation of these approaches appeared, therefore to form a useful strategy for teachers, if not particularly encountered during this research.

Moreover, where the literature describes co-teaching scenarios, more frequently it references a relationship between two teachers (and often in the special education literature, a specialist playing a more subservient role). Evident within the findings, however, were examples of how the availability of multiple teachers in ILEs led to amplification of possibilities and increased pedagogical permutations, resulting in sophisticated approaches and means of differentiation. Furthermore, where systems existed, students were able to act as co-architects of the learning experience, and co-teachers in their enactment, further amplifying available ‘teachers’.

Finally, in co-teaching literature, the ‘locus of control’ has generally been described as sitting ‘with the teacher(s)’. The findings showed where systems were

activated; particularly those afforded through digital means, students had independent access to learning material (either teacher provided or self-sourced), often for considerable lengths of time. Together, these factors enabled more significant potential for personalisation of learning, opportunities for differentiation, flexibility of, and variations in student grouping, and mechanisms to enable responsive practice. Taken as a whole, they encapsulate the potential afforded through collaboration within ILEs. Even if this potential was not presently activated, the collaborative possibilities in the space, at least held latency for this to occur.

7.3.4 Developing support structures

The fourth factor related to structural components teachers intentionally adopted or developed to support and frame teaching and learning in ILEs. The incorporation of structure in the learning environment relates to the production of order enabling learning to occur (Saltmarsh et al., 2015). This is neither new nor exclusive to teaching in ILEs, yet when compounded and complexitised by the number of people involved, structure becomes a functional necessity (Cooper, 1982; Saltmarsh et al., 2015). Hence, structure becomes more, rather than less important to realising an effective learning environment when multiple teachers were involved. Encountered structures, ('soft' rather than hard), related mainly to organisation and logistics, scheduling 'who was doing what, with whom, and when', accountability, and responsibility – as much the product of socio-spatial scale as pedagogical ambition.

The wry comment from a principal interviewed early in Phase 1; "I'm constantly amazed at how much structure and organisation you need to have to be truly flexible" (Peter), was a telling one that continued to resonate throughout the study. It spoke directly to pedagogical aspiration at the meeting point with practitioner realism, and the challenge faced by teachers in bringing practice elements together in ILEs. Saltmarsh et al. (2015), Campbell et al. (2013) and Alterator and Deed (2013) each reached similar conclusions, noting the inescapable requirement for sophisticated structures in ILEs, amplified by the need for teaching and managing larger numbers of students. In an ILE structure is central to their ongoing success and capacity for responsiveness. An evident tension in ILEs was the twin necessity for elements of structure alongside the agency to teach in particular ways; often a component of practice that teachers felt limited by in the shift to ILEs, but a familiar concept in the discourse surrounding contexts of

collaboration (Gajda, 2004; Gulati et al., 2012; Huxham & Vangen, 2000; Thomson & Perry, 2006). What became apparent, however, was that it was generally the team of teachers themselves who had instigated particular structures to enable practice; they were not always externally dictated.

Structure and agency have often been portrayed as opposite ends of a continuum; partly because simplification and binary thinking often offer a means of more simply comprehending the world we live in (Cloke & Johnston, 2005; Gregson, 2005). For social theorist Giddens (1984) however, structure, and its relationship, particularly with agency, is considered less of a dualism and more of a duality. He warns against visualising ‘structure’ as external to human action, “akin to the skeleton or morphology of an organism or to the girders of a building” (p. 16). Instead, he considers that structure is “both constraining and enabling” (p. 25) and necessarily co-constitutive. His assertion that “the structural properties of social systems are both the medium and outcome of the practices they recursively organize” (p. 25) portrays a social system that is equally reliant on both. Giddens (1984) theory of structuration holds that through their existence, structures allow and enable behaviour, and so too, behaviour can potentially influence and modify structures.

The infinitely cyclical manner through which this occurs is defined as structuration, a process that, according to Archer (1982) never reaches an endpoint, and only momentarily a product. With structuration used to describe the interplay between structure and agency, formation and deformation, it echoes the notion of ‘serial re-design’ used by Thomson and Blackmore (2006) to describe the ongoing improvement in schools; reflected in this research through tendencies for teachers to incorporate, modify, or innovate existing structures, and to adapt, modify, and redesign on an ongoing basis as required.

Structures fell into three broad categories: those that existed beforehand (*heritage*), those that did not (*novel*), and those that existed beforehand but required modification (*modified*). It challenges the assumption that practices in ILEs are by virtue ‘innovative’. Instead, it suggests that innovation is driven by circumstance and need. Novelty is contextual (Rogers, 2003).

For example at *Cityside*, heritage structures were seen to include a language of educational values and vision common across the school, the practice of timetabling

subjects, the allocation of students to a specific ‘home-room’ teacher. Modified structures included the use of ability groups (now shared between more than one teacher), the utilisation of SOLO taxonomy (used in another context), and the removal of individual teacher desks (into a shared space). Novel structures included the practice of the ‘roaming’ Learning Coach, the use of synchronous and asynchronous collaborative teacher documentation, and the relationship between self-management levels and individual spatial access. This finding was repeated across the case sites, although it was most clearly traceable at *Cityside* and *Quarryview* where spatial transition had occurred. In new school contexts where heritage and modified practices were in evidence, they were derived from teachers’ previous experience.

Here it is important to remember that collaboration itself is an adopted (if at times imposed) structure. In the context of ILEs, it is also one that precipitates a requirement for additional structures in order for effective pedagogical enactment to occur. As Saltmarsh et al. (2015) concluded, a tension exists in ILEs between an over-emphasis on structures relating to aspects of sound, movement, timetables, storage, and routines, and those which emphasise experimentation and learning together with students. To Saltmarsh et al. (2015), it was the latter that were more likely to leverage spatial opportunities, and lead to enhanced spatial usage. The findings of the present research would concur, and also add an additional claim.

In this study, as illustrated, multiple examples of structure designed and implemented by teachers were encountered during the research, ranging from the use of IT, curriculum programmes such as Daily Five, spatial differentiation through labelling and allocation, timetabling, and student grouping. These were primarily connected with the production and maintenance of order in the learning environment but also with the need to be responsive and to retain flexibility (Saltmarsh et al., 2015). In this sense such structures were designed to help organise the assemblage, perhaps, to follow Giddens (1984), more exoskeleton in nature. Other structures articulated and supported the realisation of particular pedagogical goals; language structures in particular were frequently reflexive of desired outcomes, particularly where agency, competencies, and inquiry were concerned. These emerged from schools’ visioning processes and beliefs about teaching and learning, and articulated ‘what learning looks like here’. To this end such structures were less exoskeleton in nature than endoskeleton, akin to the Medds’ “designing from the inside out” (cited in Franklin, 2012), in that they articulated

pedagogical intentions, were proactive, gave form to them in practice (when time had been dedicated to developing shared understanding), and were likely to stimulate more learning. Unlike structures put in place to ‘make the ILE work’; these were more aligned with guiding work the total assemblage might do. They were the work. Such structures therefore could be seen less as structures in the traditional sense, more as applied guiding principles, designed to empower not to regulate. In combination they supported the work the teachers were engaged in. Teachers in collaborative contexts benefitted from both.

Regardless of the type of ILE assemblage teachers had created, each included sets of structures. The presence and number of structures did not necessarily reflect a highly structured environment – instead, pointing attention towards priorities and reinforcing pedagogical intention. Language structures appeared particularly impactful in that they helped set parameters around, and frameworks on which to attach shared meaning. Structures also provided parameters within which to operate. They enabled firstly, teachers, and secondly students, to ‘be on the same page’ as one another when it came to describing and navigating the specific learning environment. This opened up opportunities for incorporation of aligned pedagogy, extended conversations, easier transition for teachers and students between ILEs, collective (and cross-school) inquiry, and a sense of organisational cohesion. In addition, the same structures provided agreed parameters within which teachers could operate, enabling conversations about agreeable and foreseeable leeway– the extent to which individual teachers could justifiably and agreeably, ‘do their own thing’ in a collaborative setting.

7.3.5 Emerging approaches (in ILEs)

The assemblages encountered in this research manifested as composites or combinations of the four factors mentioned above: teachers’ intended approach, the way collaboration was leveraged, the way co-teaching was activated, and the structures instigated to achieve and maintain this. Distillation and analysis of the findings distinguished relationality as a key concept through which to visualise, translate, and understand overall approaches. It can be understood as the way relationality between teacher, and learning, students, colleagues, and space; facilitated understanding of ‘what was going on’. Conceptualisation in this way helps in understanding the boundaries between individual and collective; and assists in understanding levels of collaboration

required as prerequisites. With these as precursors, it is possible to begin to summate, translate, and classify types of overall approaches towards enacted collaborative practice in ILEs.

Relationality in the ILE context was mappable in three directions: (a) *spatial relationality*, manifested through teachers' relationship with the parts and whole of ILEs; (b) *administrative relationality* determined through responsibility for particular groups of students within the larger cohort, (which may include taking registration, collection of data, communication with parents, and meeting with appropriate support staff); and (c) *pedagogical relationality* shaped by responsibility for teaching particular groups of students within the larger cohort, (could include establishing student needs, learning design, assessment of progress and achievement, and reporting). Each of these could be visualised as trajectories moving from fixed to fluid and a continuum between. Here, fixed refers predominantly to emphasis on relations held by individual teachers; fluid, where approaches were less individual, more networked.

Fixed spatial ownership relates to individual teachers having permanent bases within ILEs, where personal items are stored, and where the majority of their teaching occurs – essentially a 'pseudo-classroom' into the broader ILE. Fluid spatial ownership, by comparison, translates as having no fixed space, instead shifting according to the needs of students, colleagues and activity. Similarly, examples of encountered administrative and pedagogical ownership are illustrated, again moving from fixed to fluid (see Table 7.2).

Table 7.2. Range of enacted 'responsibility' practice in ILEs

Form of relationality	Fixed	Hybrid		Fluid
Spatial relationality	Teacher has own 'pseudo-classroom' setting within ILE. The majority of their activity takes place in a designated area. Space may be marked with	Teachers move within space according to timetable but may retain use of a recognised 'home-base'.	Teacher predominantly works in one space but has some responsibility for colleagues' students that requires repositioning in ILE (i.e. cross	Space negotiated with students & colleagues according to activity – teacher has no set default space of their own.

	personal items.		grouping/ station teaching).	
Organisational relationality	Teacher has own administrative 'class' unit within ILE. Their responsibility extends to all aspects of communication, administration and organisation.	Teacher predominantly has administrative responsibility for own 'class' although broader cohort of students may be considered as a whole e.g. for communication with parents	Teachers have clearly defined roles for 1) their 'own' cohort of students and 2) subgroups of the larger cohort of students.	Teachers share joint administrative responsibility for all students e.g. communication with parents, reporting, engagement with external agencies is shared by group of teachers. Relative task allocation occurs on a needs basis.
Pedagogical relationality	Teacher works solely with 'own class' within ILE with little teaching interaction with other students.	Predominantly responsible for core group of students. Some cross grouping of students with colleagues.	Teacher teaches all students in a particular curriculum area.	Teacher may work with any of the students according to activity, expertise & negotiated requirements.

Fluidity was often described as an aspirant practice form in ILEs, suggestive of high levels of more of student agency and mobility. Some of this related to a school's vision for learning and teaching. It also hinged on the level of teacher comfort with collaborative arrangements, and teachers' willingness to relinquish, or at least share some of the responsibility for students' learning. However, findings from teachers and students suggest there is still a place for relational constancy, pedagogical stability, consistent use of 'learning language', and congruence of approach.

Evident between the two ends of the continuum were examples of observed spatial, organisational, and pedagogical hybrids. Here, the terminology is used here to describe practices that may retain more fixed (and possibly familiar), elements of pedagogy, spatial use and accountability, but where teachers have sought to leverage

from the opportunities engendered by amplified numbers of teachers. It is not intended to mirror the meaning (and negative connotations) ascribed by Cuban (1993, 2007) towards teachers finding balance between teacher-centred and student-centred pedagogical approaches, but acknowledges some parallels might be drawn.

At some sites, hybrid practices had been established as the ‘norm’ of practice, for example utilising a combination of ‘class’ group learning alongside regular cross-grouping, or ‘workshop’ style learning, where students could opt into learning sessions with other teachers. In other sites they were more temporarily or sporadically employed. Often this was articulated in conjunction with notions of evolving, idealised or aspired practice, where teachers could visualise and often describe alternatives, and were working towards it as confidence, experience and understanding grew. These could be described as examples of observable (high or low) elasticity, where experimentation was evident, but there was a default position to which things would return.

The intention here is not to pigeonhole, nor make assumptions that stretch beyond the evidence gathered for this research; not all factors were made explicit at each site, neither were case-sites exhaustive. Instead, as previously articulated by researchers in the field, the development of conceptual typologies – classifications according to general type – generate language, and provide simple, and common reference points, from which to build understanding (Charteris & Smardon, 2017; Van Osch & Mendelson, 2011). Sufficient evidence emerged to form an initial framework for further differentiation and refinement. A simple categorisation accords to a series of ‘default settings’ within ILEs.

Table 7.3. Typology of general approaches towards teacher collaboration in ILEs

Approach	Description
<i>Monocentric</i>	Acknowledged presence of other teachers, but an individual student’s learning relationship is primarily with the one teacher; theoretically present in ILEs where practice and relationships translocate from traditional settings with no resultant change in practice
<i>Multicentric</i>	Learning relationships might be with more than one teacher, and learning is generally teacher-led; typified in ILEs where students have a predominant teacher relationship but some cross grouping occurs, or students can opt-into learning experiences with other teachers.
<i>Polycentric</i>	As above; and students can opt-into learning experiences with other

teachers and students.

<i>Networked</i>	Students set agenda, and co-construct learning alongside teachers, opting into and attending learning opportunities as negotiated.
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Through the findings, relationality emerged as a ‘productive concept’ when thinking about change in relative responsibility; for students, administration, and space, and the way teacher teams had approached division or shared methodologies.

7.4 To what extent is space a factor influencing teacher collaboration in ILEs?

Influence is experienced as an impact or effect, prompting a change of action, behaviour, or opinion. In this case, the occupation of ILEs, which emphasised, if not required the need for collaboration, influenced teachers, their practice, and sense of what it meant to ‘be a teacher’.

Architecturally, through qualities of scale, openness, and transparency, ILEs provided both physical, and socio-spatial context to the study. An initial distinction is made therefore between influences of physical ‘space’ and influences of spatiality in the context of collaboration in ILEs. The former, akin to spatial practice and the use of space as people go about daily routine (de Certeau, 1984; Lefebvre, 1991), the latter to spatiality, as experienced, embodied and ideologised (Benade, 2017c; Lefebvre, 1991; Massey, 2005; McPherson & Saltmarsh, 2017). In both cases, influences were found on teacher practice and ‘teacher as a person’, as well as on collaboration. It places space, and the influence it held, firmly at the centre of the working together, teaching together, and being together, triad.

7.4.1 Influences of physical space

Simply occupying ILEs did not inherently make teachers ‘more collaborative’; at best, all it could do was encourage it (Barker, 1968). Nevertheless, physical characteristics of ILEs could help to support, activate, or inhibit collaboration. The role space played in teacher collaboration in ILEs is interpreted therefore more in terms of fostering collaboration in a broader sense and as a desirable personal trait, workplace condition, and cultural foundation, rather than explicitly activating it as a discrete and

discernable spatial activity (collaborative activity was infrequent in dedicated teacher workspaces). These are articulated here through geographical concepts of space and place, scale and possibilities, flows and connections (Jackson, 2006).

7.4.1.1 Space and place

Collaboration is optimised by purpose, proximity, and process. Commercially, workplaces often have a fiscal incentive to engender such an approach through features of design, (applied through AWB theory). Hence, workplace literature describes efforts to influence behaviour through encouraging collaborative activity in dedicated settings, by deliberately creating flow lines and public places where incidental encounters may occur, and by attention towards the distances that people have to travel to converse or work with peers (Feyard & Weeks, 2011; Herman Miller Inc., 2012). The inference is that collaboration is spatially optimisable or stimulable.

As far as teachers' work was concerned, the findings showed specific teacher activities considered 'more collaborative' were conducted outside the 'teaching day'; often associated with teacher planning, learning experience design, data analysis, individual student case discussion, and event organisation. It reinforces the notion of collaboration as 'visited activity' (Forte & Flores, 2013; McGregor, 2003a), and suggests collaboration is as much a function of time as it of space.

The equivalent to AWB theory in ILEs is expressed as types of learning settings and modalities of learning, including for collaboration (Fisher, 2005a; Nair, 2014; Nair et al., 2009). In this study, where spaces were designated (and support structures were in place) for students to be collaborative, they were well utilised; students in many of these ILEs demonstrated sophisticated understandings and literacy of relationships between spaces and activities. This finding supported that of Cleveland (2011), who posits a requirement for 'reflexive' spaces in schools, which "suggest to users how they might participate in learning activities and enable them to fine-tune learning settings to suit their pedagogical needs" (p. ii). The situation for teachers, however, is somewhat different, specifically in how the suggestion is made.

7.4.1.2 *Scale and possibilities*

A theme, consistently reoccurring through the study, and associated specifically with levels of Collective Teacher Efficacy (CTE), was that scale in conjunction with collaboration led to possibilities and potential. Here, space afforded in an ILE provided a context in which collaboration was brought into daily consciousness, and at times led teachers to conceptualise ways of working that they considered previously unachievable (Lackney, 2008). In particular this related to the capacity to personalise and differentiate learning opportunities for students, leveraging on the range of learning settings made available. Here, scale was perceived to help reframe the role of teachers, by opening opportunities to reconceptualise, unbundle, and prioritise practice. Scale also provided the potential for flexibility. Here, flexibility related to the way some schools had adopted more formalised connections between a variety of spatial types, which related to specific types of learning or potential group size, in much the way described through the pioneering work of the Medds (Franklin, 2012).

In terms of relating scale and possibilities with innovation, a useful analogy may be made with the Puentedura (2010) SAMR model, initially developed to describe the way ICTs may be used in schools. The classification, (substitution, augmentation, modification, and redefinition), illustrates possible realities in the utilisation of ICTs, depending on teachers' knowledge, capacity, and willingness to engage. Translating this from the context of educational ICT into the context of teacher collaboration in ILEs demonstrates how scale, may, or may not be impactful (see Table 7.4).

Table 7.4. Application of SAMR Model to teacher collaboration in ILEs

SAMR Model classification	Descriptor	Categorisation	Application to collaborative practice in ILEs
Redefinition	Tech allows for the creation of new tasks, previously inconceivable	Transformation	Teacher collaboration in ILEs enables the creation of innovative ways of conceptualising and activating learning, previously inconceivable
Modification	Tech allows for significant task redesign		Teacher collaboration in ILEs enables significant redesign in pedagogical approach

Augmentation	Tech acts as a direct tool substitute, with functional improvement	Enhancement	Teacher collaboration is substituted into ILEs with functional improvement (e.g. through cross-grouping)
Substitution	Tech acts as a direct tool substitute, with no functional improvement		Teacher collaboration acts as a direct substitute for existing practice with little or no functional improvement

Note. Model classification, descriptor, and categorisation, adapted from Puentedura (2010)

7.4.1.3 *Flows and connections*

The findings demonstrate multiple occasions in which space played a significant role in influencing and enabling interactions, concerned explicitly with flow and connections of knowledge and information between teachers within the ILE. These included:

- Deliberate or incidental observation of colleagues. Teachers reported overseeing or overhearing colleagues' practice, and then immediately replicating it, or 'storing' the idea for later.
- Access and movement to talk with colleagues without leaving a classrooms space.
- Multiple spontaneous encounters between colleagues, resulting in 'in the moment' professional learning, response to student need, celebration, organisational confirmation, fact verification, pastoral awareness, spatial and temporal negotiation.
- Sharing 'noticings' occurring with colleagues about student learning;
- Collegial 'banter', storytelling and experience sharing.
- Swapping of resources.

These activities formed 'flow activities'; in that they occurred between people, and were experienced as information, learning, or exchange 'flows' through the ILE space. Although in themselves these do not add up to collaboration, these flows, along with a willingness to engage in exchanges – sharing and supporting others, contributing time and expertise, and participating in learning-centred discussion – supported collaborative activities, and contributed to an overall culture of collaborative professionalism in ILEs. According to teachers in the study, many of the above

activities and interactions afforded between teachers would not have occurred in less private, open, or proximal settings. Moreover, such interactions were more likely to occur when teachers shared some responsibility for students.

These were consistent with findings from previous research identifying visibility in ILEs led to increased informal exchanges between teachers (Alterator & Deed, 2013), opportunities for ‘incidental professional learning’, and for new cultures of practice to emerge (Campbell et al., 2013). In creating opportunities for these flows and connections, the physical environment helped to facilitate activities and exchanges, and team and individual professional learning. Furthermore, flows and connections between teachers were also evident to students, providing modelling of collaboration, and a broader ecosystem of learning (Hendrickx et al., 2016).

There was sufficient evidence to conclude the flows and connections (along with inherent visibility), resulted in an increased intensity of activity, discussion and practice. Hence increased scale intensified not only practice but also intensified experiences surrounding it; diminishing capacity to control number and level of interactions. Here, space acted to localise and intensify activity and experience. The suggestion, particularly by principals in Phase 1 of the study that increased cognitive load was a factor evident in collaborative practice was commonly borne out by teacher participants. Data pointed towards multiple perceived constituent factors: developing and maintaining the ongoing everyday collaborative practices together which included negotiating time and space; overlayed complexity formed by systemic educational change and a sense of challenging the status quo; new technology to learn to use (for some teachers); as well as the thinking about the here and now. Cognitive load was, therefore, often associated with the number of ongoing elements that teachers felt they had to balance. This is consistent with the findings of Wood (2017a) who evaluated that much was being asked of teachers in transitioning into ILEs. In addition to the presence of flows, multiple data sources pointed towards intensification of spatial experience (or awareness) resulting from proximity. Specifically, these emerged most significantly around concepts of territory and ownership, visibility and distance, in the space.

7.4.2 Influences of spatiality

If spatiality forms the relationship between the spatial and social (McGregor, 2003b), then it was repeatedly found to ‘act’ on teachers in ways that were

predominantly outside previous professional experience, namely, in terms of visibility, territory, and ownership. The significance attributed to them through the study marked them out as ‘threshold concepts’ (Meyer & Land, 2003) representing “a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress” (p. 1). They are articulated here through geographical concepts of visibility and distance, ownership and territory.

7.4.2.1 *Visibility and distance*

Visibility appeared a significant ‘practice-changing’ spatial implication for teachers within ILEs; prompted less by ‘visibility’ itself, and more by ‘*changes* in relative levels of professional visibility’, increased visual access into the previously ‘private’ practice and place afforded through default classroom settings. Furthermore, the findings highlighted the relationship between public and private teacher work and reflected the dominance of privacy as a workplace condition for teachers (Clandinin & Connelly, 1996; DuFour, 2011; Elmore, 2012; Flinders, 1988; Lortie, 1975; Page, 2017), to the extent some felt they needed to adapt or moderate their behaviour as a result of heightened self-awareness (Gebhard, 1999). Contrasted with a classroom spatial setting where teachers were mostly able to mediate what was seen, and by whom (often associated with compliance, appraisal, and documentation of professional standards), there was broad recognition that practice was now in the public domain (at times resulting in behaviour modification). Curiously, ‘public’ was often appropriated as an adult-adult concept, generally exclusive of children; visibility euphemised as ‘professional exposure’.

Teachers’ apprehensions prompted by increased visibility, related specifically to capacity to control over what was being seen by others. Importantly, they were keen to retain a license to learn through ‘mistake making’, while simultaneously ‘maintaining face’ in front of colleagues, (a mindset commonly articulated as also desirable in students). It was mainly, but not solely, verbalised by early career teachers who felt a heightened sense of nervousness teaching in front of colleagues. For teachers in the study, negotiated observation accompanied by feedback, was a useful component of professional learning (Argyris, 1976; Bolam et al., 2005), its mediation in the ILE was more challenging when the subject of unplanned observation. Here, what seemed important was, ‘what happens next with what is observed?’ Few teachers reported

willingness to provide unsolicited feedback outside pre-arranged observation times, for fear of upsetting colleagues and creating conflict, citing concerns over professional discomfort and workplace psychological safety (Vischer, 2008). Moreover, they often articulated an aversion to colleague's thinking that they were being 'watched'. Despite this, there was clear evidence of teachers being very aware of what colleagues were doing, with examples of teachers mimicking colleague's practice (Campbell et al., 2013), and reporting how their practice and pedagogical content knowledge had changed as a consequence.

Professional visibility could be described in four ways. It could be: (a) *prevented*, particularly through self-determined 'anti-scrutiny' practices (Saltmarsh et al., 2015; Tanner & Lackney, 2006); (b) *accepted*, such that it was understood as a feature of practice in an ILE if not entirely welcomed; (c) *normalised*, where cultural norms of psychological safety had been co-constructed around 'what if' scenarios; and (d) *activated*, such that norms extended into actively initiating conversations, addressing issues, eliciting and giving feedback, building personal capacity to inquire into practice, on the understanding that professional learning would lead to positive outcomes for all. This latter category was contingent on high levels of relational trust among colleagues (Bryk & Schneider, 2003).

The idea that practice is 'visible' is both a relation of perception and also of power – a "real social process in itself" (Brighenti, 2007, p. 325). Perception, because what is viewed can only be interpreted through a lens of 'seen', concerning the experience of the observer; power, because the observer is then able to choose what to do with new knowledge. Notably from a Foucaultian perspective, visibility or the privileging of visibility of one party over another (asymmetrical visibility), gives rise to a (possibly intentional) power imbalance (Foucault, 1977). Although historically designs of school buildings have afforded a degree of passive surveillance over children (Dudek, 2000), in many contemporary ILEs teachers are as observable as the children. Hence to Prain et al. (2014), a desire for transparency may create "unwelcome monitorial panoptic control over teacher behaviour in open settings" (p. 201). The extent to which professional visibility then becomes interpreted as 'availability to be observed', and 'opportunity to observe', remains a feature of ILEs teachers will need to navigate and negotiate their way through, as well as to spatialise into everyday practice.

7.4.2.2 *Ownership and territory*

This study concurs with Henkin et al. (2010) who suggest prevalent concepts of ownership and territory (spatialised ownership), are likely to be disrupted by a shift into collaborative settings, “as organisational members are compelled to interact differently in both physical and psychological spaces” (p. 53). Here, ownership and territory were found to be a second significant ‘practice changing’ spatial concept for teachers within ILEs, with significant disruption occurring to constructs of ‘being’ a teacher, ‘having’ a classroom, and ‘having’ a class. In particular for teachers undergoing transition from traditional spatial settings, there was likely to be a need for considerable relinquishment of ownership, pertaining to place, people, and practice. The transitional stage from the relatively private realm of individually ‘owned’ classrooms to a shared space was reported to be a paradigm shift in thinking and practice by the majority of teachers. In this research, findings highlighted a requirement for teams of teachers to restate how these ‘ownership’ relationships might be interpreted and indicated, emerging as a formative step in determining how practice in the ILE would be construed.

Psychologically, ownership (Dawkins et al., 2017) is concerned with meaning and emotion associated with possession, the relationship between individual and objects, material and immaterial, and affective sensations when challenged (Dawkins et al., 2017). It has roots in fundamental motivations for efficacy, self-identity, and having a place (Pierce et al., 2001; Pierce et al., 2003). Belk (1988) describes ownership as part of one’s “extended self” (p. 1), therefore contributing towards an individual’s identity. Useful here are two conceptual applications: firstly that ownership can extend to place (Pierce et al., 2003), and secondly, to people (Belk, 1988). By extension, it can refer equally to individuals as well as collectives: “mine” and “ours” (Pierce et al., 2003).

In the primary school context ownership, both are familiar ideas. The historic partitioning of primary schools into ‘classrooms’ and ‘classes’ has formed an enduring and enculturated practice; in turn, often associated with accompanying mechanisms for systemic sorting, ‘grading’ and organisation of students (Burke & Grosvenor, 2008; Freire, 1972). Hence, relative ‘ownership’ of classroom space has typically been expressed as an element of professional life (Henkin et al., 2010; Wallace, 1980), and by extension to those who occupy it (Goulding & Friedman, 2018). Critically, the quality of the teacher-student relationship is known to be an important one, often

associated with the likelihood of academic success, a source of security and socio-emotional wellbeing, of appropriate challenge, and predictability (Bergin & Bergin, 2009; Bishop et al., 2014; Hattie, 2009; Kesner, 2000; Riley, 2009). As a consequence, as (Kesner, p. 134) states, “perhaps there is no other nonfamilial adult that is more significant in a child’s life than his or her teacher” (p. 134).

Connections between classrooms and their inferential position as mediating power, authority and territory have also been well documented (Foucault, 1977; Gouling & Friedman, 2018; Lieberman & Miller, 1990; McGregor, 2004b; Smith, 2017). Teachers often find themselves able to act relatively autonomously in decisions of daily routines, student grouping, time allocation and spatial practices (Butti, 2016; Clandinin & Connelly, 1996), where autonomy is control over one’s environment (Hoekstra et al., 2009). Hence practice in ILEs presents an alternative to the idea of the classroom becoming a “teacher’s total world” (Lieberman & Miller, 1990, p. 156), extended into conceptual ‘ownership’, or ‘territory’ through time, experience, presence and material artifacts (Kleinsasser, 1991).

7.4.3 A relationship between teacher collaboration and space

Fundamentally, ILEs influenced teacher collaboration by providing physical proximity and context, and hence the location within which ‘more collaborative’ professional activities could, if encouraged and enabled, occur. They also provided a spatialised context reflexive of contemporaneity and innovation. Relative affordances revealed through concepts of space and place, scale and possibilities, and flows and connections showed that physicality of space contributed towards encapsulating a collaborative intention. The context of ‘being together’, encourages ‘working together’, which in turn may well encourage ‘teaching together’, or at least sharing responsibility for a cohort of learners. It was not a guarantee of success; instead, providing a location in which it would be more likely enacted than a series of traditional classrooms.

Where contested, it was likely as a consequence of discomfort, and distrust precipitated by alterations to spatiality. Most notably this is captured through manifestations of visibility and relationality in conjunction with firmly held principles of practice and professionalism. Here space shielded or yielded to unintended practice. In this case, opportunities to leverage improvised and emergent affordances outweighed

those designed and intended. Space could encourage collaboration, but collaboration has to be ‘encouraged’ by more than just the space.

Of interest also, was the level of teachers’ conscious engagement with the space provided to them. Particularly, for those coming to terms with new ways of working, it was apparent that entering into a relationship with space (and how it might support practice) was not a priority. More pressing were the needs to establish routines for learning, relationships with students, and structural components of practice. Hence it appeared what they encountered first was the relationship that space had on them, (and often concerned with visibility), rather than the relationship they might have with it, or on it themselves.

Thus: the role taken by space and spatiality emerges in the ‘space-between’ intentions and implications, and the enactment of teacher collaboration in ILEs. It is explicated through proximity (or proximities), relationality and visibility. It determines space and spatiality to play a pivotal role in making what is implicit through design and intent, explicit and enactable on an ongoing basis. This ‘space-between’ is illustrated in the final iteration of the emerging model.

7.4.4 Model: Terrains of teacher collaboration in ILEs

The model, Terrains of teacher collaboration in ILEs, emerged iteratively through the study. It began through the literature review and Phase 1 findings, by building knowledge and ascertaining connections between global drivers of educational change, and specifically the impetus and rationales for in-situ scenarios of teacher collaboration in ILEs. Specifically these were determined to be; approach to learning, socio-pedagogical alignment, and professional positioning. In consequence, direct implications on teachers, were found to be at individual, team, and practice level.

The findings in Phase 2, established through meaning making in the case-site ILEs drew attention to the multifariousness, complexity, and simultaneity present in teacher’s enacted practice in ILEs. In doing so it determined teacher practice to extend significantly beyond merely conceptualising an ILE as a place where teaching together occurs. Instead, teacher collaboration is extrapolated to exist as the product of three aspects of enactment: teaching together, working together, and being together.

In application, the model was then adopted as a theoretical framework through which to investigate how teacher collaboration in ILEs intersects with space and spatiality. What became apparent were the relationships between space and spatiality, and the different type of productive, professional and pedagogical activity enacted within the assemblages formed within ILEs. It renders space and spatiality as performing a fundamental role.

In the model, the interior and exterior triangles locate (a) rationales and implications for teachers, and (b) the product of enacted practice. The role taken by space and spatiality is between the two, explicated through proximity (or proximities), relationality, and visibility. It determines space and spatiality to play a pivotal role in making what is implicit through design and imperative, explicit, and enactable on an ongoing basis.

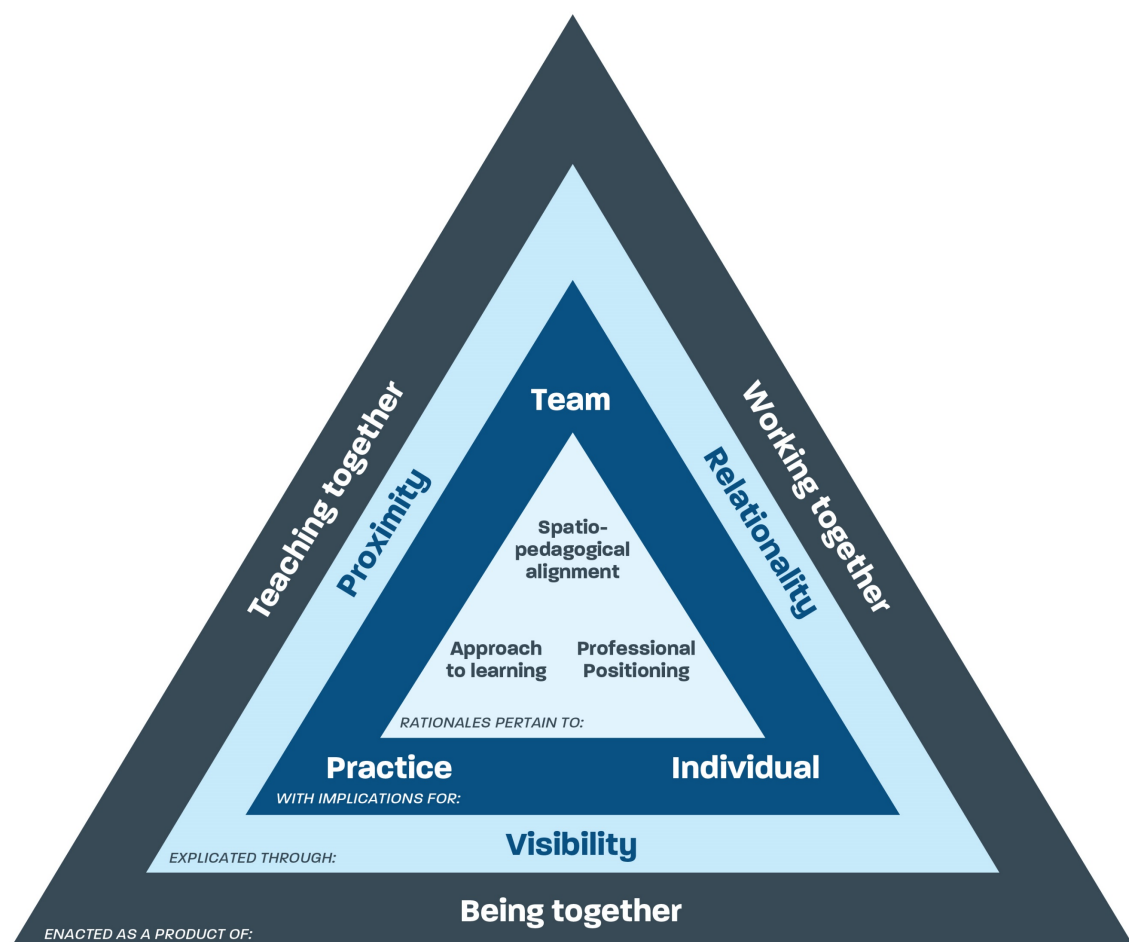


Figure 7.1. Terrains of teacher collaboration in ILEs

In its most simplified and easily articulated form, the model can be stripped back to illustrate that teacher collaboration in ILEs can be deconstructed into components of

working together, teaching together, and being together. The model is offered as a simple but significant output of the study.

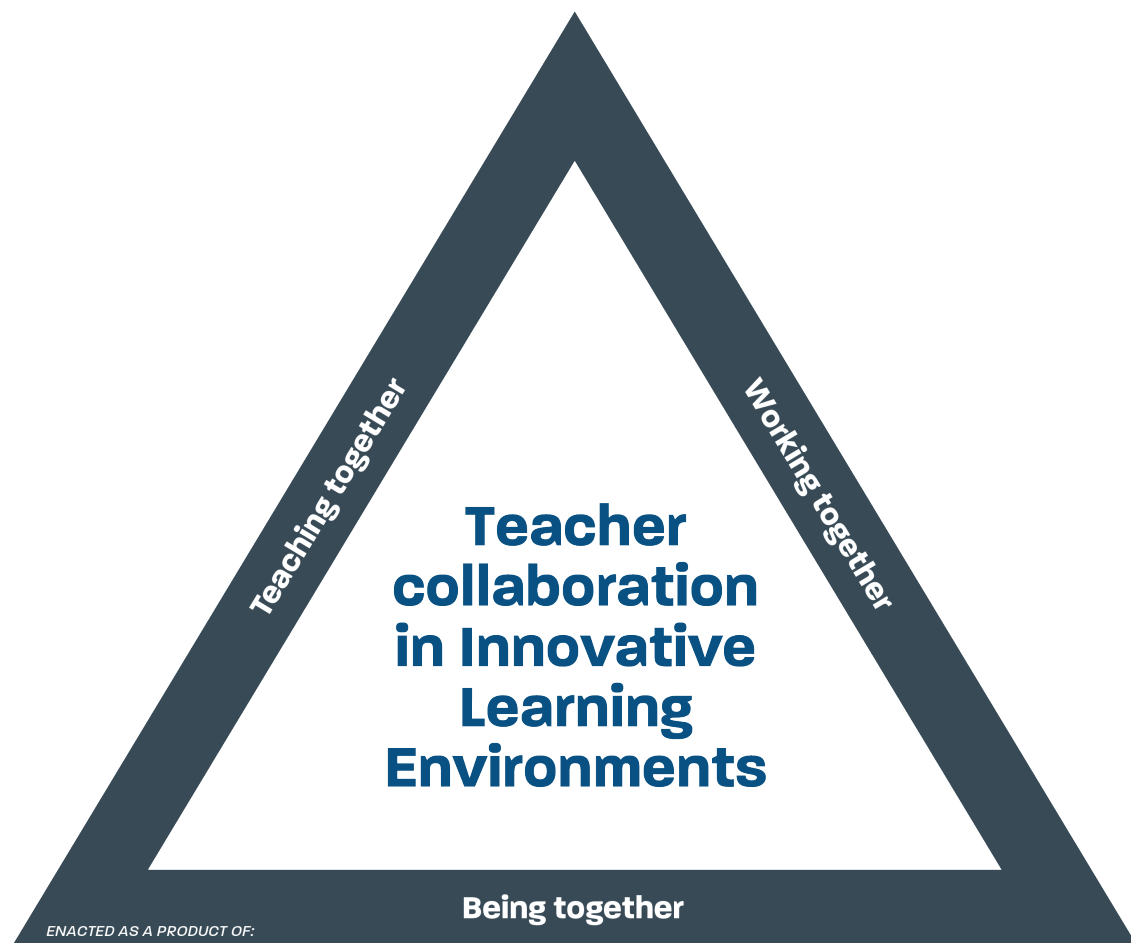


Figure 7.2. Terrains of teacher collaboration in ILEs (simplified)

7.5 Conclusion

Discussion of the findings has, through exploring the four subsidiary research questions, coalesced to further understanding of how teacher collaboration in New Zealand primary school ILEs has been pedagogically and spatially, theorised, conceptualised, and enacted. Critically, for this study, they (ILEs and teacher collaboration) need be seen in combination; notwithstanding teachers' inhabitation of ILEs and engagements in collaboration are not mutually exclusive – even though the former would look to presume the latter.

Theoretically, teacher collaboration in ILEs presents at the nexus of twin discourses. Firstly, that of collaboration; based in a theory of civic republicanism, and centring on the idea that leveraging the differences between participant in an integrative process may lead to a solution, and commitment to a solution, which goes beyond the

limited imagination of any one individual involved (Thomson & Perry, 2006). Secondly, that of ‘built pedagogy’, the architectural embodiment of educational philosophies, (Monahan, 2002) described by Luz (2008) as “the ability of space to define how one learns, teaches, acts or responds” (p. 1), and finding expression in the ILE, the most recent form of innovation in school learning environment design. ILEs walk a fine line between relevance for the ‘now’, in terms of espoused and identified affordances required for contemporary learning, and the adaptability and flexibility required towards maintaining relevance in the foreseeable mid-term. As a built and pedagogically activated response to the current agenda for educational relevance and reform, the pairing offers a distinctive shift in the historically entrenched ‘grammar of schooling’ (Tyack & Tobin, 1994), encapsulated in primary schools’ proclivity to specify one teacher-one classroom-one year. The sum, therefore, is a product of theoretical educational coalescence – the conjoining of two big ideas; that humanly, ‘space matters’, and that high levels of collaborative professionalism are required in order to achieve educational outcomes which will support students to thrive in future learning, work, and life. Theoretically, it offers a promise or at least more of likelihood to deliver on a promise, of socially and spatially relevant settings in which contemporary learning may occur.

Theoretically, therefore, teacher collaboration in ILEs embraces and attempts to actualise connections between pedagogy and space, through heightened provision and variety of affordances and settings, which, if leveraged, indicate a propensity for greater levels of increased choice, agency, responsiveness, differentiation, efficiency, and opportunities for considering ‘alternatives’, in teaching and learning. Barnett (2011) claims that by opening up walls, learning spaces can be reimaged in a way that has the potential to “change students’ lives” (p. 168). To him, such spaces “conjure[s] themes of freedom, openness, personal realisation and creativity” (p. 167). It is a familiar tone in the contemporary space discourse, and one, which leverages the immutable image of a classroom as stoic but flawed. Such discourse about ‘the classroom’ as behavioural or symbolic is foremost articulated at a global, socio-political level – yet it is individual teachers who experience and need to conceptualise the change on a day-to-day basis, at a human level.

Conceptually, collaboration between teachers is good for teachers; accentuating opportunities for professional learning, reduced isolation, collective efficacy, job

satisfaction, and viability, or entitativity; the motivation to keep collaborating. However, collaboration has occupied a problematic location within the teaching profession; known for its relative autonomy, isolation and individuality, and attempts to mandate it holding the risk of it becoming less ‘spontaneous’ and more, ‘contrived’ (Hargreaves, 1994). Furthermore, previous widespread attempts to spatialise and normalise collaboration in the profession (at primary school level), have generally been acknowledged as failures; in part, attributable to the built environment, in part to the model of pedagogy enacted within it (Cleveland & Woodman, 2009).

Therefore, in the present discourse, spaces that purport to change students’ lives also hold significant potential to conceptually change teachers’ lives. Specifically, by challenging socio-spatial aspects of work and workplace that have previously, been taken for granted (McGregor, 2003a). Classroom spaces are acknowledged as helping to create teacher identity (Mulcahy, 2006). They have, in the main, constituted inherently private workplaces, such that led (Clandinin & Connelly, 1996, p. 25) to state that; “classrooms are, for the most part, safe places, generally free from scrutiny, where teachers are free to live stories of practice” (p. 25). Within them, teachers have generally worked in isolation, resulting in high levels of professional autonomy, privatisation, territorialisation, and low levels of visibility (Campbell et al., 2013; DuFour, 2011; Elmore, 2012). Although these may not be such desirable values for contemporary education, in the profession they are well documented. Each aspect is found to be more complex and often contested in shared teaching spaces (Deed et al., 2014). Conceptually, this change – cultural, professional, as well as spatial – should not be underestimated.

Teacher collaboration in ILEs finds itself on unusual ground. ILEs are designed and constructed with collaboration firmly in mind, yet for the profession, it is a relatively unknown quantity. As the findings have shown, spatially apparent concepts such as visibility, territory, and ownership play a significant role in determining how teachers will learn to understand and make meaning of new socio-spatial assemblages.

Identification of opportunities and challenges, as well as understanding how both were leveraged or mitigated (or mediated), formed a significant component of this research; especially given the move towards collaborative practice constituted meaningful change for teachers; often to, rather than within, established frameworks or

methods of operation (Bartunek & Moch, 1987). Such change in schools might be viewed in terms of what is newly or more easily enabled or afforded (Gibson, 1977), along with the integral concerns or problems prompted through ‘newness’. A determinative step in the research was in understanding the extent to which collaboration was evident, rather than merely making the assumption it was; formed under the euphemism that joint work was by default collaborative. The findings, to use the language of Huxham (1996), ascertained collaboration between teachers in ILEs was not only ‘happening’ but ‘valuable and difficult’ too; a triad utilised here to surface actualisation, opportunities, and challenges. It provides a fitting framework with which to conclude this chapter.

7.5.1 Teacher collaboration in ILEs: ‘Happening, valuable, and difficult’

7.5.1.1 Was teacher collaboration ‘happening’ in ILEs?

The findings confirmed teaching in ILEs necessitated engagement with colleagues at a level, and with intensity, previously unencountered by the vast majority of teachers in the study. Overall, teachers were engaged in working significantly ‘more collaboratively’ than in previous circumstances. Moreover, teachers frequently discussed their work, practices and intentions, using such words as ‘collaboration’, ‘collaborative’, ‘collaboratively’, ‘collaborativeness’, and ‘collaborated’; illustrating at least a belief they were engaged in collaboration. Hence the research revealed in order for ILEs to operate successfully, teachers placed an imperative on the need to ‘be collaborative’.

Viewed this way, it was evident that teachers were engaged in planning and designing learning experiences together, developing team approaches, and undertaking joint reflection on their work. However, the extent to which some aspects of practice reached ‘collaboration’ requires clarification. Working from the definition employed by Gray (1989), collaboration is taken to be a step beyond cooperation and coordination. Its emphasis is on bringing people together to solve a problem; achieving something collectively they are unable to do on their own. From this perspective, reflecting on enacted teacher collaboration in ILEs encountered in the research, several things became evident.

Firstly, some aspects of some teachers' work encountered in the research aligned with the Gray (1989) definition of collaboration: often in collectively agreeing a shared focus; setting up structures and systems, forming agreements relating to ways of working, pre-determining 'what if...' scenarios, developing common language structures, and working closely to design learning experiences. However, more commonly observed situations were akin to activities of coordination or cooperation (Peterson, 1991) denoting synchronisation or sharing practices.

Secondly, participants often synonymised work as 'collaboration'. It was not a surprising outcome; reinforcing previous evaluations of collaboration as something of a 'catch-all' concept; challenging to articulate with any consistency, and often used interchangeably (Dillenbourg, 1999; Gajda, 2004; Vangrieken et al., 2015; Wood & Gray, 1991). Similarly, it concurs with McDermott and Hall (2016), who categorised many versions of collaboration as "pseudo-collaboration" (p. 49), where people espoused collaboration but practised something different.

Thirdly, the distinction appeared between work that occurred at the interface with students, and work occurring before, or afterwards. It reinforced the differences between the design and implementation of co-teaching noted by Easterby-Smith and Olve (1984), and the level to which teachers were jointly, or individually responsible for planning and preparation of material. Building on the findings discussed previously, the 'teaching' or implementation component of work in ILEs was frequently conducted alone, despite the inference underpinned in the term 'team' teaching. However, collaboration was strongly evident in the 'design required to make it happen' phase; often, with teachers engaged in joint planning, accessing resources, and developing modules of learning.

7.5.1.2 How 'valuable' was teacher collaboration in ILEs?

Huxham (1996) considered that what was valuable about collaboration was the opportunity to achieve things not achievable individually, and the moral imperative of applying this to the resolution of significant societal problems. 'Value' might, therefore, be determined by whether or not what emerged from teams reflected these criteria.

With this in mind, the findings revealed numerous examples of pedagogical practices established and enacted by teachers in ILEs, which expressly recognised and

leveraged the presence of a team of teachers to enable specific pedagogical approaches, particularly those based on differentiation, responsiveness, and the utilisation of teacher strengths. Within ILEs, there were abundant ways in which teachers might group students. The presence of multiple teachers increased capacity to be able to do this in a way that encouraged flexibility and responsiveness. Roles where teachers were in mobile or ‘roaming’ roles had the potential to not only support students in responding to learning situations but also to support colleagues in enabling them to focus on specific tasks or groups. Hence, value was attributed to enabling aspects of learning such as student agency, engagement, personalisation, responsiveness and pedagogical variation; activated in ILEs, in ways considered unfeasible in traditional spatial settings.

Furthermore, collaboration in ILEs was ascribed value (by teachers), in providing a ‘more real-world’ context in which to actualise contemporary constructs of learning; focused on competencies, knowledge, and the ‘soft skills’ desirable under an agenda of educational improvement in the 21st Century; mirroring connected ‘learning communities’ and ‘ecosystems’, much in line with OECD (2013) research. What were valuable to students were choice, opportunity to make decisions impacting their learning, and engagement opportunities with multiple adults. Also, and in some cases, as a result, school leaders reported increased student engagement, and reduced incidents of behaviour.

Value can also concern the impact on teachers, not only in their capacity to perform their role, but also in job satisfaction, efficacy, and team entitativity (Vangrieken et al., 2016; Vangrieken et al., 2013). Here, the findings determined practices enacted in primary school ILEs characterised by, or resulting in, higher levels of professional collaboration were viewed as a ‘good thing’ by participants; considered to help to improve teacher practice through factors of increased visibility, in-situ professional learning, role definition, efficiency, and capacity to be responsive.

It was consistent with a view of collaborative professionalism as being instrumental to improved outcomes for students (Hargreaves & O'Connor, 2017, 2018; Hattie, 2015b), as well as contributing to individual and collective teacher efficacy (Donohoo, 2017; Eells, 2011; Goddard et al., 2004). Here, value connects strongly with the idea of professional capital (Hargreaves & Fullan, 2012), where professional capital is the product of human, social and decisional capital: *human capital*, the knowledge

and skills developed in people; *social capital*, the quality of interactions and relationships; and *decisional capital*, the ability to make discretionary judgements. For Hargreaves and Fullan (2012), professional capital is about, “what you know and can do individually, with whom you know it and do it collectively, and how long you have known it and done it and deliberately gotten better at doing it in time” (p. 102). Furthermore, where cultures of inquiry were evident, the shared workplace environment appeared to encourage a high level of reflective practice both on action, and in action (Schön, 1983).

The extent to which collaboration is deemed ‘valuable’ may also be assessed by how well enacted practice aligns with, responds to, or amplifies, a school’s vision and beliefs systems (Atkin, 1996); in essence, how ‘value-able’ the practice is. To Atkin (1996), a move towards value-based practice requires “reflecting upon how particular practices help them achieve what they value and believe” (p. 4). There was significant evidence of schools having interrogated their thinking about collective values and beliefs, and using it as a platform for subsequent work.

The findings revealed levels of Collective Teacher Efficacy (CTE) and collective capacity, articulated through potentiality, “We’re not there yet, but we know where we want to be” (Suzanne, *Quarryview*); or, “it raises the bar” (Ryan); and, ‘I feel like there’s more possibilities in here’ (Emily). Where there were high levels of such efficacy, the language of possibility was commonplace: often with clearly articulated goals in mind, in other situations, excitement over unknown possibilities. It formed an exciting line of inquiry for two reasons. Firstly, where there was evidence or perception of high quality ‘working together’, teachers had a keen interest in maintaining it and building upon it. Secondly, good outcomes from collaboration led teachers to value or increase the value, which they placed on the collaborative process and raised their levels of expectation towards what they could achieve together. It was associated with the idea that working in an ILE would help them to become ‘more collaborative’; indicating the notion that collaboration as a process may lead cyclically to increased collaboration as an outcome and capacity to take into further work (Thomson & Perry, 2006; Vangrieken et al., 2016; Vangrieken et al., 2013).

Themes of potential, latency and optimism were prevalent; done well, the fruits of collaboration could engender a significant practice shift for teachers and transformed

learning experiences shift for students. The shift was particularly evident alongside well-articulated cultures of learning, where mistake making and risk-taking were normalised between teachers (and between teacher-student, student-student). Further study might well leverage ideas of potential and possibilities, and to explore longer-term transition in practice. Also, this research did not set out to quantitatively evaluate the overall effectiveness of collaboration on student outcomes, or to look at relationships between ILEs and aspects of collective teacher efficacy; both would be valuable studies.

7.5.1.3 How ‘difficult’ was teacher collaboration in ILEs?

Collaboration was difficult specifically because the factors that provided antecedents for collaboration also held the need for accustomisation, adaptation, or new learning; often less in terms of ILEs themselves, more with the types of practice the spaces anticipated, their operationalisation, and, in particular, individual relationships. Furthermore, contrary to (Hargreaves & Dawe, 1990) view of collaboration needing to be ‘spontaneous and voluntary’, it was apparent that arrangements were often iterations of existing teams, or, in the case of new schools made up of teachers willing to be in ‘any team’, with unknown colleagues. To this extent, the arrangements were more reminiscent of ‘contrived collaboration’ which Hargreaves and Dawe (1990) define as “administratively designed to smooth the path of externally imposed innovation” (p. 230). However, as Datnow (2011) notes, although such arrangements may provide a necessary starting point, with continual checking on collaborative processes, more contrived situations may in turn shift towards more genuine collaborative activities. There was certainly evidence of this occurring.

Evident in the findings were multiple factors that reflected the perceived complexity in supporting [operationalising] what was, or would be for many teachers, an alternative way of working within an unconventional practice context. These are consistent with the categorisations of Vangrieken et al. (2015), and show factors facilitating collaboration operate at different levels: individual, team, and organisational. Unsurprisingly given the focus of this research, those factors at the individual and team levels were more prominent at this point of the study. In this data, for example, the findings appeared principally concerned with desirable individual teacher dispositions and traits (Vangrieken et al. (2015) refers to these as personal characteristics), the

negotiation of team dynamics (indicative of a group characteristic), and navigation of practical implications (indicative of a process characteristic).

Hence the practical application of collaboration appeared contingent on understandings of professional conditional change, particularly in terms of *working together*. What was significantly less apparent across the findings was in descriptions of *teaching together*, (taken here to refer to activity encountered at the interface with students). For example, findings revealed individual and team qualities, systems of managing communication, technology, time and structure as strongly articulated. In essence, these refer to aspects of working together rather than specific pedagogical team approaches. The language of co-teaching or team teaching persisted as an evident ‘absent presence’ throughout the interviews; absent despite well established models illustrating possible ways for teachers (generally two), to work together, as applied in the context of Special Education (Friend & Bursuck, 2009; Villa et al., 2008).

The findings justify stating that a move to collaborative teacher work in ILEs constituted a significant change in teachers’ realities and relationships. Multiple findings illustrated intensification, complexitisation, and deprivatisation and challenged as a result. Intensification emerged from temporal and discursive simultaneity, necessitating time spent together in an unprecedented way. Complexitisation emerged through the design and enactment of organisation and coordination approaches, particularly those associated with differentiation, student agency, and responsive practice. Deprivatisation occurred in physical and digital space, particularly interpolating the simultaneity of practice as observed and ‘observable’. Challenged occurred at the boundaries of individual and team, mine and ours, alone and together, continuity of existing and adoption of new practice – each requiring accustomisation and adaptation.

The findings also justify stating levels of professional navigation and negotiation; with both colleagues, and of the assemblage itself, were heightened by the move towards collaborative work. Specifically, navigation emerged from the need to understand how to engage with new ways of working, not only with colleagues, but often with students, material, curriculum foci, and digital interfaces – sometimes exacerbated by the requirement for new professional learning; negotiation emerged

from ILEs being shared professional workplaces, the need for consensus, and commitment – along with the potential for conflict.

Taken as a whole the research helps to illustrate the idea that for all the design and investment in ILEs, the extent to which teachers can *teach together*, *work together* and *be together* is pivotal to their success. The data justifies stating that teacher collaboration is accentuated in ILEs. Initially, it is accentuated through intent and design, but then through visible characteristics of professional learning, through practice, and then through efficacy and possibility. Therefore, teacher collaboration in ILEs provides the potential to accentuate learning, professional inquiry, and innovative approaches. However it requires teachers to enter into amplified relationships with one another and with the space they occupy together in order to maximise the opportunities engendered through spatial innovation.

Chapter 8

Conclusions, implications, and directions for further research

8.1 Introduction

Contemporary educational discourse repeatedly calls for fundamental systemic change in order to ensure the relevance of learning and teaching for ‘modern times’, along with the capacity to adapt to the unknown and unforeseeable (Ananiadou & Claro, 2009; Cobo, 2013; Cope & Kalantzis, 2008; Fullan & Langworthy, 2014; Gilbert, 2005; Monahan, 2005; Trilling & Fadel, 2009; Zhao, 2011). Central in the discourse, the idea of what constitutes ‘knowledge’, and therefore, what is relevant to learn and teach has undergone significant transition (Apple, 1993; Duhn, 2006; Gilbert, 2005; Luckett, 2009; Moore & Young, 2001; Pinar et al., 1995; Quicke, 1999; Slattery, 2006). It has resulted in refinements to educative priorities, curricula, methods of teaching, roles of teachers, and to what is valued in schools; emphasising concepts and characteristics for learning, which include digital enablement, personalisation, dispositional traits, problem-solving and critical thinking, cross-disciplinarity, ethical and emotional awareness, and cultural competence. Taken as a whole, they purport to constitute a conceptual, and even paradigm, shift in the educative experience required for students. However, what remains unchanged, although the emphasis may have altered, is the continuing need for quality teaching, quality relationships, and quality environments.

Few, however, argue that the shift towards contemporary practices required to bring about the ecosystem of learning envisaged, and outcome changes required, does not also require a commensurate shift away from isolated and individualistic teacher attitudes, spatial practices, and pedagogical approaches. Hence a growing body of analysis and commentary draws attention to teacher collaboration and collaborative professionalism at both local and system level with a view to building on previous models of collaboration and better understanding requirements and processes to enact it (Hargreaves & O'Connor, 2017; Leana, 2011). Similarly, a growing body of research draws attention to the type of learning environment best suited to support, facilitate and stimulate contemporary educational approaches and methods of teaching (Blackmore et al., 2011b; Dovey & Fisher, 2014). Connections resulting from examination of

connections between spatial and pedagogical theories have made way into international and national agenda and policy, professional conversation, and initiatives for change; then applied through the widespread development of ILEs, accentuating flexibility, learning settings and afforded action possibilities (Ministry of Education, 2011; OECD, 2013).

The cultivation of deep levels of multi-level collaboration is considered instrumental to leveraging large-scale shifts in students' educational outcomes (Fullan & Langworthy, 2014; Goddard et al., 2007; Hattie, 2015b; Stoll et al., 2006). Much of this is attributed to increased teacher motivation and morale, alongside a reduction of isolation (Vangrieken et al., 2015); understood to lead to higher levels of collaborative professionalism (Hargreaves & O'Connor, 2017) and Collective Teacher Efficacy (Donohoo, 2017; Eells, 2011). Despite multiple grouping types commonly encountered in schools, each with an expectation for some or much collaboration, there remains ambiguity around how collaboration is understood, interpreted and enacted (DuFour, 2004, 2007; Forte & Flores, 2013; Kelchtermans, 2006; Vangrieken et al., 2015). It presents a significant problem for teachers in ILEs; anticipated to accentuate and epitomise collaboration in action, yet lacks a coherent theory of action.

No studies, however, have specifically investigated the relationship teacher collaboration alongside contemporary educational spaces: this, despite a notion that the majority of ILEs, particularly in primary schools, presuppose high levels of collaboration. Specifically, in the discourse regarding the transition of teachers into ILEs, the enactment of teacher collaboration from a spatial perspective, therefore, appears something of an 'absent presence'; it appears under-researched and under-theorised, yet provides a lynchpin underpinning the prospective success of ILEs. It forms the location for the current research.

Chapters four to seven have presented findings and analysis of data from this study. These chapters investigated the idea of teacher collaboration in ILEs in the context of New Zealand primary schools. This final chapter, split into five sections, offers conclusions, implications, and directions for further research. The first section presents an overview of the study. The second discusses the contributions made to the field. The third and fourth sections discuss implications for practice and theory. The final section provides directions for further research and some concluding comments.

8.2 Overview of the study

The study connected two important fields of knowledge embedded within the discourse of contemporary educational thinking – learning environments and teacher collaboration – and illuminated phenomena emerging at their intersection, within a case study set in New Zealand primary schools.

The study began by mapping the landscape for discussion – beginning by contextualising contemporary education and highlighting drivers of change. Next, the review of literature highlighted contemporary and historical, professional, pedagogical, and theoretical research about learning environments, and collaboration, both apart and together. Teacher collaboration in ILEs was examined as a socio-spatial construct, influenced by factors of space and spatiality; antecedent, process, and outcomes; and evolving iterations of innovation in primary schools.

Subsequently, the study outlined the development of a collective, instrumental case study (Stake, 1995), with teacher collaboration as a focusing concept, rather than a focus on a group of teachers. The case study was designed as three phases, conducted over a year, funnelling from the general to the specific. It benefited from imagining the researcher as ‘bricoleur’ (Denzin & Lincoln, 2011) learning how to ‘borrow’ and combining elements from ethnographic techniques (Parker-Jenkins, 2018), to assist in comprehending specifics and complexities. The fieldwork involved interviews with seventeen ‘expert’ informants, ‘snapshot’ studies conducted in six primary school ILEs, and three longer in-depth studies. This process aimed to provide an iterative progressive focusing (Parlett & Hamilton, 1976), in order to contextualise, conceptualise, and further understand the phenomena locally. Trustworthiness and authenticity (Guba, 1981; Lincoln & Guba, 1985) were achieved through triangulating multiple sources of evidence, involving a broad range of informants, extended time in the field, and production of an overall study with an output aimed at ontological faithfulness.

The study produced a series of significant findings discussed below. It has revealed new insights into teacher collaboration in the context of ILEs in New Zealand primary schools. Through focusing on the four subsidiary research questions, it illuminates understandings about the purpose, opportunities and challenges encompassed in collaborative practice; the nature and nuance surrounding in-situ collaboration in ILEs; how collaborative practice is both envisaged and enacted; and the

role of physical space and spatiality in nudging, supporting, or inhibiting teacher collaboration. Together, the findings coalesce a field of inquiry, which previously looked at just parts of the whole, into a whole of parts. In doing so, the study responds to the key research question: How is teacher collaboration in New Zealand primary school ILEs pedagogically and spatially, theorised, conceptualised, and enacted?

8.3 Contributions to research

A key antecedent, knowledge gap and justification going into the study was that teacher collaboration in ILEs was both under-researched and under-theorised. A clear intention of the study was to add value to both components, and to their intersection; understanding how the concepts interconnected, the role space played in teacher collaboration, and visa versa. New insights have emerged through the research, justifying the initial research intent. They are explored below.

8.3.1 Insights into the nature of teacher collaboration in ILEs

A significant outcome of the research is a set of empirical findings that provide a sophisticated and nuanced understanding of teacher collaboration in primary school ILEs in New Zealand. The findings show specifically how teacher collaboration in ILEs has been rationalised and realised: rationalised, from the perspective of changes to socio-spatial alignment, professional positioning, and approaches to learning, and justified through a schema of ethics, care and responsibility; realised, through multiple forms of enacted practice, established and applied in situ, and gauged as dimensions and degrees of concentrated or diluted collaboration. In addition, it has utilised the definition of collaboration by Gray (1989) to understand which aspects of practice were collaborative, rather than cooperative or coordinated in approach. As a result, the research has helped move ‘collaboration’ from the generic to specific in this context, supporting the idea that in order to put collaboration into practice, it helps first to move beyond general descriptions and euphemisms, and understand what exactly it is (Gajda, 2004).

The study reveals a discursive gap (Bernstein, 1999) between the horizontal everyday knowledge regarding collaboration – often euphemised as working together – and the specialised knowledge required to leverage the full opportunities engendered through collaboration. It has also made some crucial distinctions in understanding the

essence of teacher collaboration in ILEs: conceptually, between collaboration, co-teaching, and co-habitation, while drawing attention to their simultaneity and interrelatedness. The activities are differentiated and framed as working together, teaching together, and being together. The latter represents the most significant professional adjustment for teachers, involving repositioning, refiguring, and relinquishment of practice, place and people, requiring adaptability, acceptance, empathy, and resilience.

In so doing, the study has highlighted opportunities and challenges, which emerge through instigation and enactment of collaborative practice; manifesting at individual, team, or practical and operational levels, adding to that previously identified in the literature (Vangrieken et al., 2015). It has illustrated how these opportunities and challenges become amplified, intensified, and complexified as a consequence of the spatial proximity brought on by the occupation of ILEs.

Furthermore, a significant contribution made by the study is through combining concepts of space and collaboration to ascertain where, and how, they intersect. The study has distinguished associations between teacher collaboration, physical space, and spatiality. In particular, this has resulted in highlighting complex layers for consideration.

The study posits the importance of relationality, so often the key to educational success, as a foundational layer for effective collaboration. Distillation and analysis of the findings distinguished relationality as a key concept through which to visualise, translate, and understand overall approaches; understood as the way relationality between teacher, and learning, students, colleagues, and space; facilitated understanding of ‘what was going on’ in situ.

The study has, therefore, added to the literature encountered at the intersection between pedagogy and space, particularly creating reference points for subsequent research regarding embedded collaboration; assessed as constituting a profoundly spatial phenomenon.

8.3.2 Insights into enacted approaches to teaching and learning in ILEs

The research has produced analysis and discussion regarding enacted practices and overall approaches to teaching in ILEs. These descriptions have emerged through a

process of reification – taking the theoretical to the concrete – in an attempt to understand experiences, contextualities, commonalities, and complexities. Central ideas and concepts have been identified, and language developed to support their description. In part this helps give clarity to aspects of collaboration and practice which may otherwise may intermingle; in part to help give language to phenomena; and in part to embody the findings compelling teachers and schools to ‘make explicit, the implicit’, when working together, and particularly when transitioning from traditional learning environments to ILEs.

The study has highlighted four critical insights for consideration. The first is that enacted approaches were a composite or combination of four factors: pedagogical intention, leveraging of collaboration, application of joint teaching strategies, and structural components. Activation and optimisation required articulation, recognition, knowledge and decision-making of each, in a delicate balance between the need for consistency, continuity, sustainability, and collective buy-in; and working out what an approach might look like at nine o’clock on Monday morning.

The second is that collaboration was reliant upon multiple proximities – geographic, organisational, and technological – in order to connect people, place and practice in meaningful and sustainable ways. Negotiated and co-constructed proximities helped to set intention, culture, norms, organisation, and ways of doing things. They highlighted areas of collective efficacy as well as potential or apparent misalignments.

The third is in acknowledging the profound significance of changes to realities and relationships that accompany the move into ILEs, particularly with the move towards the public nature of the practice. Spatially, materially, and professionally, the realities of ‘being a teacher’ and ‘having a class’ were each instrumentally impacted. Hence there was a requirement for sensitive navigation and negotiation of, and within, this new terrain; teachers often requiring new learning about themselves, interpersonal interactions, and collaborative professionalism, in order to participate fully, and psychologically safely, in new assemblages of practice.

Finally, the findings also justify stating specific pedagogical scope emerges from contexts of teacher collaboration in ILEs. These included ways of innovating and ‘unbundling’ (Hess & Meeks, 2010) practice, associated with realising increased choice (agency), responsiveness, differentiation, efficiency, and opportunities for ‘alternatives’

in ways, which under previous spatial and professional arrangements were less or not feasible.

8.3.3 Insights into the relationship between teacher collaboration and space

The study follows spatial thinkers such as Lefebvre (1991), Massey (2005), and Soja (1989), in understanding space as socially constructed, or as socio-spatial. Furthermore, it builds on the work of researchers who have worked from the premise that educational space is an interrelationship between the material, the physical, its inhabitants, and the context that surrounds it, rather than of it as an empty vessel to be filled (Benade, 2017c; Charteris & Smardon, 2018; Gislason, 2007; Lackney, 2008; McGregor, 2003a; McPherson & Saltmarsh, 2017; Monahan, 2002).

The research has determined that teacher collaboration in ILEs, framed as working together, teaching together, and being together to be a profoundly spatial phenomenon. It should not perhaps come as a surprise given its circumstances have been derived from, primarily, a spatial change, shown to be influenced by and through multiple proximities. Yet, many of its implications reverberate beyond those implied by an upscaling up physical space. Implications are concerned with space and place, scale and possibilities, and flows and connections, alongside experiences of visibility and distance, and ownership and territory – together, placing space and spatiality at its core. They concern professional identity, heritage, learning, relationships, autonomy, and behaviour; each revealed through an ostensive de-cloaking of practice, and re-positioning in relationship to place, preference and personality.

The phenomenon of teacher collaboration in ILEs therefore, both reflects, and exemplifies the idea of “space as the product of interrelation”; thus inviting a return to the Massey (2005) definitions of space and place presented earlier:

First we recognise space as the product of interrelations; as constituted through interactions, from the immensity of the global to the intimately tiny...Second, that we understand space as the sphere of the possibility of the existence of multiplicity in the sense of contemporaneous plurality...Third, that we recognise space as always under construction... it is always in the process of being made.

It is never finished; never closed. Perhaps we could imagine space as a simultaneity of stories-so-far. (p. 9)

The Massey (2005) definition of space functions as a useful metaphorical lens through which to envisage the discourse around, context of, and enacted practice within ILEs.

Firstly, teacher collaboration in ILEs is at once representation of an idea, form of spatial practice, and representational of a concept (Lefebvre, 1991). The findings have shown how the discourse has navigated from a place of geopolitical perspective on learning; portraying a specific ‘social imaginary’, prompted by global change, altering understandings of knowledge, the ‘workplace imperative’, and ethics captured in anticipatory dialogues. ILEs present a scalar response, dovetailing with a view of learning as expansive, digitally enabled, ecological, and connectivist (AlDahdouh et al., 2015; Chatti et al., 2010; Downes, 2005; Ireland, 2007; Kop & Hill, 2008; Merriam, 2018; Siemens, 2005, 2006; Strong & Hutchins, 2009), creating a ‘built pedagogy’ (Monahan, 2002) for the ages. Through this, the ILE has emerged as a microcosm of amplified connectivity, reinforcing access to, and relationships with learning; shifting as it does so the roles teachers have been traditionally perceived to play.

Hence, secondly, the dismantlement of traditional school boundaries produces heightened levels of professional visibility and porosity, providing opportunities for alternate pedagogic encounters and stories. The multiplicity blurs the lines between learner and teacher, class and classroom, individual and collective, public and private, inside and outside; challenging the direction of information or pedagogic flows, and inviting heterogeneity of approach and possibility, (imagined and not yet imagined), to develop. ‘Space’ emerges as ‘opportunity’ for newly understood, or predicted realities, practicalities and daily routines (Lefebvre, 1991). Here space and relationality overlap, exhibiting a reliance on the personal and interpersonal traits of willingness, adaptability, acceptance, empathy, and resilience. An ILE is a space, which invites, and tolerates diversity and difference – but only to a point. Proximity and principle prevail. The space remains acutely sensitive to territorialisation, control and power – each of them entirely visible.

Thirdly, in addition to Massey (2005), the idea space is always ‘under construction’ is one leveraged by McGregor (2003a) as being ‘made’, and yet

simultaneously being ‘re-made’; ‘becoming’ (Dovey, 2010); and portrayed as a “finished beginning” (Barrett & Zhang, 2009, p. iv); and akin to the notion of educational ‘serial redesign’ Thomson and Blackmore (2006). Spatially, relationally and pedagogically, ILEs, like classrooms beforehand, are not ‘a thing’; instead a socio-spatial setting which teachers, students, and schools together will continue to ‘make’, as time and context permit, and as teachers further ‘sense-make’ with one another and in conjunction with their alternate spatiality. What became apparent was that capacity to collaborate could not be assumed – nor the capacity to leverage spatial affordances. Both required explicit learning, discipline, as well as disciplined practice. Nevertheless, ILEs, apparent through constantly visible practice and regular opportunities, intensification of dialogue, the potential for rapid feedback loops and witness to everyday colleague’s practice might offer an accelerating mechanism for this to occur. The findings offer ways of better understanding the here and now and the place of ILEs.

For Massey (2005):

Rather, what is special about place is precisely that throwntogetherness, the unavoidable challenge of negotiating the here and now (itself drawing on a history and geography of thens and theres); and a negotiation which must take place within and between both human and nonhuman. (p. 140)

‘Throwntogetherness’, which provides uniqueness to place, links to notions of permeability, porosity and “the chance of space may set us down next to the unexpected neighbour” (p. 151). In many respects, this seems apt when applied to teacher collaboration in ILEs. The findings have shown that many teachers have found themselves in novel and unfamiliar relationships with space and colleagues, some through choice, others through circumstance. Equally that permeability and porosity have become instantiated; perceived as either opportunity or barrier, and leveraged, left, or limited accordingly.

As places of enactment, therefore, the findings show teacher collaboration in ILEs as constituted in the ‘here-and-now’, and as the results of ‘thens and theres’. Practice in ILEs is constructed at first according to context, intention, understanding, experience, and imagination, and mediated through priorities, necessity and time. Space appeared less of an influence initially than spatiality, hence one which requires carefully timely engagement. The findings suggest an inherent latency and potentiality offered by

the ecology of learning, collaboration and space; but one, which time, and access to professional learning, will help to understand and realise.

As understanding of ‘collaboration’, space, and what together they might afford increases, teachers will have more ‘then and theres’ on which to draw. This inherent latency, encapsulated in place suggests that perhaps what is special about the place of ILEs is their ‘bringtogetherness’; assemblages cohering spatio-pedagogical alignment, contemporary approaches to learning, and professional positioning. In sum, perhaps ILE might best stand as a mnemonic for the opportunities engendered by the provision of new learning environments and spatialised collaborative professionalism – a (trust-based) place in which collective teacher efficacy might grow.

8.4 Implications for practice

The study has furthered understanding of the nature of, approaches to, and spatial relationships with, teacher collaboration in ILEs. It was conducted primarily with teachers and school leaders in mind, prompted by the broad promotion of new spatial settings in New Zealand Primary schools. The study contributes to the field through forwarding a model to help support teachers and school leaders to understand, differentiate, and articulate enacted practice within ILEs. The findings can assist, therefore, with teachers transitioning into, or occupation of ILEs in a number of ways.

Firstly, and through translation into a simple model of teacher collaboration in ILEs, it brings increased clarity to the complexities, multifariousness, and simultaneities of elements contained in ‘what teachers do’ in ILEs, taking into account their pedagogical practice, the work that goes on to develop and support it, as well as the realities of co-location and co-habitation. This clarity helps form language and inform discourse; particularly by supporting teachers and school leaders to be able to articulate areas of challenge and opportunity, proximity and distance, intention and outcome. In addition, the findings showed the importance of relationalities, proximities, and visibility as instrumental in the process of explication. It explains why common language, shared conceptual structures, ‘out loud’ thinking, and team agreements, and culturally normed practices supported teachers in their teaching, working and ‘being’.

Secondly, it may lead to timely identification of pertinent areas for individual and team professional learning, along with directions for school development. For

example, it was clear that teachers held limited knowledge of styles and applications of co-teaching approaches, even though some were employed. Similarly, digital tools, particularly those supporting teachers systematically, were capable of providing robust support structures; in doing so, supporting reconsideration of how learning across cohorts of students could be mapped and enabled. Moreover, the nature of ‘being together’ highlighted the potential for learning in non-traditional areas, such as in self-understanding, interpersonal problem solving, and empathy building. Much like Hargreaves (1998) and Datnow (2018) have previously recognised, teaching is emotional work. Relocating teachers from traditional settings into ILEs accentuated this and drew attention towards the criticality of interpersonal relationships.

With this in mind, a recommendation is for schools to consider how they might best support teachers transitioning to, and working within collaborative situations. The need for initial and ongoing need for support can well be anticipated, and perhaps facilitated through models of coaching; particularly given the effective repositioning, refiguring, and relinquishment undertaken during the transition. Similarly for teams, especially those moving through the storming and norming phase of group development (Tuckman, 1965; Tuckman & Jensen, 1977), schools will need to consider how best to support approaches to conflict and disagreement. It was evident that collaboration in ILEs required discipline, and disciplined practice, along with language and tools that would support teachers to discuss process and outcomes, challenges and opportunities. Taken as a process, and in order to maximise the opportunities presented by the provision of new spatial types in schools, developing understanding and expertise in collaboration appeared critical. The findings would confirm a basis for creating pre-emptive agreements in teacher-teams (D'Amour et al., 2008; Ring & Van de Ven, 1994; Thomson & Perry, 2006), supported as a reflective tool, and by techniques that help teachers feel enabled to address issues met en route.

Thirdly, the study has shown the importance and potential of collaborative approaches in ILEs in realising possibilities, and particularly those pertaining to enabling increased choice (agency), responsiveness, differentiation, efficiency, in teaching and learning, as well as fostering opportunities for ‘alternatives’. For teachers and schools, this means stepping through a process of ascertaining priorities, opportunities and challenges in their context; and help in building an understanding of what they want to achieve through teacher collaboration in ILEs. In particular, this

would encompass describing an intended initial pedagogical approach, based on local values and beliefs; before articulating the way collaboration would be leveraged; co-teaching approaches developed, practised, and adopted; and support structures required or relevance of those already in place. Shared language around process, curriculum, expectations and norms, provided a powerful alignment mechanism with which to enculturate this, especially where relevant, also part of students' register. In each circumstance, there was no need to wait until transition before instigation. It was easier for teachers to operate within known routines, structures, and practices – at least in the initial stages – building teacher readiness through pre-emption and prototyping (Armenakis et al., 1993; Holt et al., 2007; Osborne, 2016).

Fourthly, to the model: entitled, *Terrains of teacher collaboration in ILEs* after Messner (1997), it emerged iteratively and has become a significant product of the project; initially as an outcome, and then as a framework to extend the research further. It became a useful vehicle to help understand and consolidate the role played by space in ILEs. The model developed only through continued analysis of the data, and was slowly refined as understandings emerged and deepened. Importantly the layers are not to be read linearly. Instead they exist to bind layers of thinking, the triangles indicating boundaries between components layers.

An intention, emerging through the research process, is that the model may support teachers and leaders to conceptualise, articulate and navigate new socio-spatial settings for teaching and learning, along with examining how enactment practices will be influenced by space and spatiality; specifically manifesting in the form of proximities, relationalities, and visibility. At its simplest, the descriptors of *teaching together*, *working together* and *being together* frame a wealth of applications for professional learning. At a deeper level the model serves to frame discussion around how practices might be imagined or manifest. Hence it may support schools in the reification of practice, shifting it from the abstract into the concrete.

Finally, for teachers, the study highlights the need to qualify the character and function of collaboration. 'Collaboration' was often used to describe the entirety of an assemblage, whereas the study has highlighted it as an element of activity within it. It is a significant step away from discerning that all work in these circumstances is inherently 'collaborative', and joint. Through alignment with the Gray (1989) definition

of collaboration, it also promotes consideration of circumstances under which collaborative work may add value, and when cooperative or coordinated approaches are more relevant, efficient, or effective. Instrumental in helping to achieve this, as with much of the activity of working together, was the benefit compelling teachers and schools to ‘make explicit, the implicit’, and not to rely on assumptions about practice, people, and place.

8.5 Implications for theory

To borrow from Aoki (2003):

Here I recall teachers speak of their pedagogic struggles in the midst of the plannable and the unplannable, between the predictable and the unpredictable, between the prescriptible and the non-prescriptible. Their pedagogical where? – between the curriculum-as-plan and the live(d) curricula. Sites of living pedagogy? (p. 2)

Likewise, for teachers shifting into new pedagogical and spatial terrain, physically proximal, visible, collaborative, and to a greater or lesser extent ‘innovative’, there is a sense of occupying similar ground - somewhere between space-as-aspirational and as lived. The study has thus aimed to help generate theory by cohering two discourses – that of learning space, and that of teacher collaboration. It is a nexus imbued with professional historicity, pedagogical contemporaneity, and imagined futures. The opportunity provided by intertextuality illuminates inherent tensions between potentialities and practicalities, the known and unknown, the here-and-now and the then-and-there. In doing so, intertextuality reveals (to use the term coined by Cherry (2005), new ‘white spaces’.

As Cherry (2005) argues, “some of the most exciting and significant forms of creative and innovative effort emerge from the ‘white spaces’ between existing domains of knowledge” (p. 310). Here, the ‘white space’ in question is located in the space-between pedagogy, space and teacher collaboration. The approach taken here, along with the derivation of the model, *Terrains of teacher collaboration in primary school ILEs*, aims to address some of this gap, through aligning a definition of collaboration with those taking a more problem-based approach (Gray, 1989; Thomson & Perry, 2006; Wood & Gray, 1991). In doing so, it separates the act of collaboration from that

of *working together*, articulating the idea that despite common understanding, they are not the same thing.

Enacted practice is theorised here to exist as a product of *working together*, *teaching together*, and *being together*. Simultaneously, it is produced in space, and is a product of space, subject to construction, deconstruction, and reconstruction over time (Massey, 2005), each demonstrated to ‘act’ upon teachers in predictable and unforeseen ways, constituting ground upon which coalescence or contestation is experienced. What has emerged through this study is that there is value in specifically approaching teacher collaboration in ILEs from a spatially theoretical perspective; a valid addition to theoretical work already undertaken in the discourse of contemporary spatial innovation and pedagogical realisation (Alterator & Deed, 2013; Benade, 2017a, 2017c; Campbell et al., 2013; Charteris et al., 2017; Cleveland, 2011; Deed & Lesko, 2015; Dovey & Fisher, 2014; Fisher, 2004; McGregor, 2003a; Monahan, 2002; Mulcahy, 2014; Peterson, 2015; Saltmarsh et al., 2015; Woodman, 2011; Woolner, 2010). The study’s implications from and on the centrality of space and spatiality as a component of teacher collaboration in ILEs form a starting point from which to begin further theoretical work.

8.6 Directions for further research

Inherent within any study in the social sciences is the capacity and temptation to extend and expand the research, beyond its original scope, as new insights form, and new findings emerge. Accordingly, there are, therefore, multiple directions in which subsequent study might lead. They are discussed below.

The case study, conducted across three phases, coalesced around findings from six case sites. These were selected utilising the technique of reputational site selection (Goetz & LeCompte, 1984; LeCompte & Schensul, 2010). Inevitably, they remain only a limited sample from the range available at the time. Future study in the New Zealand context can undoubtedly leverage from the expanded range of ILE based sites available, along with potentially extended ranges and styles of practice within. Furthermore, although this study contained an element of longitudinally, with visits over several months, future research might examine a site across a prolonged period, focusing on change in practice, rather than a point in time.

The adoption of teacher collaboration in ILEs falls broadly within the agenda of systemic school improvement, with socio-spatial alignment and collaborative professionalism considered instrumental in leveraging large-scale shifts in students' educational outcomes (Fullan & Langworthy, 2014; Goddard et al., 2007; Hattie, 2015b; Stoll et al., 2006). Although studies and reviews have begun to emerge, which interrogate the relationship between learning in ILEs and outcomes for students (Barrett et al., 2012; Blackmore et al., 2011b; Byers et al., 2014; Byers et al., 2018; Cleveland & Fisher, 2014; Cleveland & Soccio, 2015; Imms, 2018; Ministry of Education, 2016c, 2016d; Tanner, 2000), there is still considerable work required in understanding 'what works'? In collaborative situations, this can extend, therefore into the evaluation of 'what works together?' Specifically, the findings of this study would suggest that evaluation of collaboration and ILEs in conjunction with measures of Collective Teacher Efficacy (CTE) (Donohoo, 2017; Eells, 2011; Hattie, 2012) could prove fruitful.

Further directions for research may be encapsulated within the domains of *working together*, *teaching together*, and *being together*. The emphasis of this study has been on understanding the elements of practice in ILEs and their enactment. Further research might isolate components in more depth, or explore the process of how teams arrive at them. Indicated by the findings several areas present as of interest: the relationship between pedagogical approach and online platforms in ILEs and how they might afford teacher efficiency; trust and professional capital building in physically proximal settings (Adams, 2013; Bryk & Schneider, 2003; Goddard, 2003; Hargreaves & Fullan, 2012; Park et al., 2005; Vangen & Huxham, 2003); teacher's collective capacity to develop approaches enabling increased choice (agency), responsiveness, differentiation, efficiency, and opportunities for 'alternatives'; the development of team agreements and how they might support internal review and conflict resolution (Barron, 2000; Hung et al., 2017; Hunsaker et al., 2011); the nature of professional learning in ILE contexts (Alterator & Deed, 2013; Blannin, 2018; Campbell et al., 2013); the role of team entitativity in the context of ILEs (Vangrieken et al., 2016; Vangrieken et al., 2013); or emerging facets of collaborative professionalism (Benade, 2017a; Hargreaves & O'Connor, 2017; Hattie, 2015b; Locke et al., 2005). As with this study, the majority of these possible directions centre on the teacher or teachers. Inherently, there is equal value in exploring teacher collaboration in ILE the child's perspective; especially given

contemporary discourses surrounding agency (Charteris & Smardon, 2017), cosmopolitanism (Duhn, 2006), and mobility (Leander et al., 2010). To that end this study may act as something of a “finished beginning” (Barrett & Zhang, 2009, p. iv) for subsequent exploration.

8.7 Concluding comments

History may determine that ‘ILE’ might well form a suitable mnemonic for the educative opportunities engendered by the provision of new learning environments and spatialised collaborative professionalism in the early decades of the 21st century. For the time being however, what has emerged in the here and now is an understanding of some of the terrain ahead. The terrain in question is, quite literally, found in the space-between. Not, as originally imagined in this case, between the physicality of an ILE in comparison with a classroom, or between the experience of working collaboratively rather than alone. Instead, the terrain exists in the space between the implicit and the explicit, between the rationale, and the realities and relationships required to make it work, and continue to work. Successful adoption of teacher collaboration in ILEs is ultimately reliant on personal, team, and systemic growth in understanding how to navigate this terrain. My hope, through the work undertaken in this study, is that this terrain is not quite as blank as it was at the outset.

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Appendix 1: Interview themes and questions

Phase 1 - Indicative interview questions ‘experts’

The questions listed illustrate the types of questions that will be asked in the semi-structured interviews conducted in the research. The questions are clustered into a number of main themes that will provide the general structure for each interview. The interviewees will not be asked all of the questions. Opportunities will also be taken to explore themes and topics raised by the interviewee.

It is anticipated that semi-structured interviews will be of approximately 60 minutes duration.

Introduction

I am looking at the development of Modern Learning Environments in New Zealand, particularly with regard to collaborative teacher practice. I’m interested in your thinking, opinion and experiences, and really value the opportunity to speak with you today.

Definitions of Modern Learning Environments

- How would you define a Modern Learning Environment?
- What in essence, separates it from a traditional teaching and learning space?
- In your view, what is the underpinning thinking behind the shift towards MLEs – what have been the key drivers - or the catalyst for the change?
- So if you took a walk through a MLE, what are some key things you would expect to see?

Personal narrative

- Could you tell me a bit about the role you are in now and how it involves MLEs?
- Could you tell me about your own MLE journey?
- What are some of the key changes you’ve seen in MLE thinking over this time

The New Zealand context

- Is there a particular New Zealand perspective on the thinking?

- In your experience, what are some of the key questions and issues that schools are raising about MLEs?

Pedagogical approaches in MLE

- In your opinion and experience does the space make a difference? What difference?
- What do you see as particular emerging pedagogical models that are supported by MLE spaces?
- To what extent does the MLE space offer opportunities to do things that teachers have been unable to do previously?
- To what extent does it provide a barrier to particular approaches?
- What have you seen that you would regard as particularly effective practice in a MLE? What makes you say that?
- Does the environment have the power to change teacher practice?

Nature of collaboration between teachers

- There seems to be an increasing shift towards MLEs that accommodate multiple teachers and larger groups of students. I'm interested in what you see as the rationale behind the move?
- Do you think that being in a collaboratively taught MLE affects the student's learning experience? In what way?
- Do you see distinct advantages for teachers?
- What might the challenges be?
- What do you see as the major implications of working collaboratively for schools, for teachers and for students?
- Does working together change the relationship a teacher has with students?
- Is there a change in power dynamic when there are multiple teachers?

Collaboration

- What are the ideas underpinning the notion of multiple teachers working together? How do you see this impacting on students?
- Do teachers teach in different ways when they work together?
- Are there particular challenges and opportunities that present themselves because of the physical proximity of teachers to one another?

- Does the proximity cause a change in teacher behaviour?
- Does the space challenge the way that teachers see their own professional identity?
- Where does the line sit between teachers working together and teachers working apart? What sort of tasks might be better done together or apart?
- Collaborating together on everything might be very challenging, so what do you see as key tasks that are done together?
- Does working together take something away from the nature of the interaction that a teacher has with his or her own class?
- Are there certain mindsets or ways of thinking that are important for teachers working in collaborative MLEs?
- What are the distinct challenges that teachers face when being asked to work collaboratively and how might the space they are working in help to facilitate that?

The space itself

- How does space impact on people's behaviour?
- Does the design of the space affect the way teachers work together?
- Does the design of the space impact on the relationships that students have with teachers?
- For an environment to be designed for collaborative teaching what do you see as important considerations in its design?
- To what extent do you see it as important for a teacher to still be able to close off a space and work in a more private setting, within a MLE space? Is there still a role for more private practice?
- Do you see it as important for teachers to have a designated place to meet?

Occupation of space – teacher workplace

- Are there key underpinning beliefs or understandings that are required of teachers working in MLE?
- What influence does the environment have on teacher's ability to work together?
- Are there particular precursors required before moving into collaborative MLEs?
- What particular attributes should principals be looking for when selecting teachers to work in these MLE environments?

Reputational site selection

- What indicates to you that a MLE is being used successfully?
- Could you give me some examples of where I might see high-quality teacher collaboration in action in a New Zealand primary school ILE, either new or refurbished?
- Why do you suggest them specifically?

Snowball - experts

- Are there any people with particular expertise in this area that you would recommend I speak to about collaborative practice within MLEs?

Phase 2 & 3 - Indicative interview questions - Principals

Introduction

I am looking at the development of Modern Learning Environments in New Zealand, particularly with regard to collaborative teacher practice. I'm interested in your thinking, opinion and experiences, and really value the opportunity to speak with you today.

Learning

- What is the underpinning vision of the school in terms of what learning looks like here?
- How does the vision translate into the built environment?
- As Principal, to what extent have you been involved in the design of the MLE you have here? Can you take me through some of the thinking involved?

Definitions of Modern Learning Environments

- How would you define a Modern Learning Environment?
- What in essence, separates it from a traditional teaching and learning space?
- In your view, what is the underpinning thinking behind the shift towards MLEs – what have been the key drivers - or the catalyst for the change?
- So if you take a walk through a MLE, what are some key things you would expect to see?

Personal narrative

- Could you tell me about your own MLE journey?

- What do MLE look like here and why?

Pedagogical approaches in MLE

- In your opinion and experience does the space make a difference? What difference?
- What do you see as particular emerging pedagogical models that are supported by MLE spaces?
- To what extent does the MLE space offer opportunities to do things that teachers have been unable to do previously?
- To what extent does it provide a barrier to particular approaches?
- What have you seen that you would regard as particularly effective practice in a MLE? What makes you say that?
- Does the environment have the power to change teacher practice?
- How do you group children (Year levels/ multi-level/ school within school)?
- How do you group teachers?
- What seems to you to be the optimum number of teachers to work together in a shared space? What makes you think that?

Nature of collaboration between teachers

- There seems to be an increasing shift towards MLEs that accommodate multiple teachers and larger groups of students. I'm interested in what you see as the rationale behind the move?
- Do you think that being in a collaboratively taught MLE affects the student's learning experience? In what way?
- Do you see distinct advantages for teachers?
- What might the challenges be?
- What do you see as the major implications of working collaboratively for schools, for teachers and for students?
- Does working together change the relationship a teacher has with students?
- Is there a change in power dynamic when there are multiple teachers?
- What does team teaching look like here?
- What do you call what you do? Team teaching? Collaborative practice? MLP? Why have you chosen this term?

- What does your professional learning look like – have you identified any particular areas of need since working together?
- What is your process for selecting who works together?
- Is there a leadership structure in the MLE?
- How do teachers organise meeting times? What happens during the meetings?

Collaboration

- What are the ideas underpinning the notion of multiple teachers working together? How do you see this impacting on students?
- What are the particular skills or capacities that teachers need in order to be able to work closely together?
- How have you developed these skills?
- Do teachers teach in different ways when they work together?
- Are there particular challenges and opportunities that present themselves because of the physical proximity of teachers to one another?
- Does the proximity cause a change in teacher behaviour?
- Does the space challenge the way that teachers see their own professional identity?
- Where does the line sit between teachers working together and teachers working apart? What sort of tasks might be better done together or apart?
- Collaborating together on everything might be very challenging, so what do you see as key tasks that are done together?
- Does working together take something away from the nature of the interaction that a teacher has with his or her own class?
- Are there certain mindsets or ways of thinking that are important for teachers working in collaborative MLEs?
- What are the distinct challenges that teachers face when being asked to work collaboratively and how might the space they are working in help to facilitate that?
- What indicators do you look for that the collaborative approach is working well, or not working so well? What is the process for addressing it?
- Do you have mechanisms in place for evaluating the success of each MLE, or MLE team?

- Are there any 'bottom line' expectations around the way that teachers work together?

The space itself

- How does space impact on people's behaviour?
- Does the design of the space affect the way teachers work together?
- Does the design of the space impact on the relationships that students have with teachers?
- Are there aspects of the design that impact on the way it is used by teachers and students?
- For an environment to be designed for collaborative teaching what do you see as important considerations in its design?
- To what extent do you see it as important for a teacher to still be able to close off a space and work in a more private setting, within a MLE space? Is there still a role for more private practice?
- Do you see it as important for teachers to have a designated place to meet?
- Are there any things that you would like to change about your current spaces? What would you change, and why?

Occupation of space – teacher workplace

- Are there key underpinning beliefs or understandings that are required of teachers working in MLE?
- What influence does the environment have on teacher's ability to work together?
- Are there particular precursors required before moving into collaborative MLEs?
- What particular attributes do you look for when selecting teachers to work in these MLE environments?

Phase 2 & 3 - Indicative Focus Group/ Interview questions - Teachers

Introduction

I am looking at the development of Modern Learning Environments in New Zealand, particularly with regard to collaborative teacher practice. I'm interested in your thinking, opinion and experiences, and really value the opportunity to speak with you today.

Learning

- What is the underpinning vision of the school in terms of what learning looks like here?
- How does the vision translate into the built environment?
- As teachers, to what extent have you been involved in the design of the MLE you have here? Can you take me through some of the thinking involved?

Definitions of Modern Learning Environments

- How would you define a Modern Learning Environment?
- What in essence, separates it from a traditional teaching and learning space?
- In your view, what is the underpinning thinking behind the shift towards MLEs – what have been the key drivers - or the catalyst for the change?
- How would you describe the MLE that you work in?

Personal narrative

- Could you tell me about your own MLE journey?
- What do MLE look like here and why?

Pedagogical approaches in MLE

- In your opinion and experience does the space make a difference? What difference?
- What do you see as particular emerging pedagogical models that are supported by MLE spaces?
- To what extent does the MLE space offer opportunities to do things that teachers have been unable to do previously?
- To what extent does it provide a barrier to particular approaches?
- What have you seen that you would regard as particularly effective practice in a MLE? What makes you say that?
- Does the environment have the power to change teacher practice?
- How do you group children (Year levels/ multi-level/ school within school)?
- How do you group teachers?
- What seems to you to be the optimum number of teachers to work together in a shared space? What makes you think that?
- Are there some things that you have tried that haven't worked out?

- Does your teaching or students' learning look different to your previous environments?
- Has the way that you teach changed as a result of working in the MLE? In what way?

Nature of collaboration between teachers

- There seems to be an increasing shift towards MLEs that accommodate multiple teachers and larger groups of students. I'm interested in what you see as the rationale behind the move?
- Do you think that being in a collaboratively taught MLE affects the student's learning experience? In what way?
- Do you see distinct advantages for teachers?
- What might the challenges be?
- What do you see as the major implications of working collaboratively for schools, for teachers and for students?
- How do you know who is doing what?
- How do you know where they are doing it?
- Does working together change the relationship a teacher has with students?
- Is there a change in power dynamic when there are multiple teachers?

Team teaching

- What do you call what you do? Team teaching? Collaborative practice? MLP? Why have you chosen this term?
- What does team teaching look like here? What would I see here over a week or so?

Organisation

- How do you decide who works where?
- How do you organise meeting times? What happens during the meetings?
- Do you have any particular organisational systems, or shared ways of doing things?
- What does teacher's planning look like? Where is it stored?
- Who decides who works together?
- How do you manage behaviour with the larger group of students?

Professional Learning Community

- Who selected the team to work together? What was the process and who was involved?
- What does your professional learning look like here – have you identified any specific areas of need since you began working together?
- Do you have shared strategic goals around particular learners, or learning areas? How are these decided?
- How do you use data as a team – what does that look like?
- Is there a leadership structure in the MLE? Who takes the lead?
- How do you evaluate how well your team is going – and what are the steps to making improvement?
- Does it make you a better teacher, or just a different one?
- How long did it take you to start working well as a team?
- What are your strategies when things are not going so well?

Collaboration

- What are the ideas underpinning the notion of multiple teachers working together? How do you see this impacting on students?
- What are the particular skills or capacities that you need in order to be able to work closely together?
- How have you developed these skills?
- Do you teach in different ways when you work together?
- Are there particular challenges and opportunities that present themselves because of the physical proximity of you to one another?
- Does the proximity cause a change in teacher behaviour?
- Does the space challenge the way that you see your own professional identity?
- Where does the line sit between teachers working together and teachers working apart? What sort of tasks might be better done together or apart?
- Collaborating together on everything might be very challenging, so what do you see as key tasks that are done together?
- Does working together take something away from the nature of the interaction that as a teacher you would have with ‘your own class’?

- Are there certain mindsets or ways of thinking that are important for you working in collaborative MLEs?
- What are the distinct challenges that teachers face when being asked to work collaboratively and how might the space they are working in help to facilitate that?
- What indicators do you look for that the collaborative approach is working well, or not working so well? What is the process for addressing it?
- Are there any 'bottom line' expectations around the way that teachers work together?

The space itself

- How does space impact on people's behaviour?
- Does the design of the space impact on the relationships that you have with students and other teachers?
- Are there aspects of the design that impact on the way it is used by teachers and students?
- For an environment to be designed for collaborative teaching what do you see as important considerations in its design?
- Are there particular parts of the MLE designated for particular activities? How do you organise these spaces?
- Are there any things that you would like to change about your current spaces? What would you change, and why?
- Where do you keep your own stuff?

Occupation of space – teacher workplace

- Are there key underpinning beliefs or understandings that are required of teachers working in MLE?
- What influence does the environment have on teacher's ability to work together?
- Are there particular precursors required before moving into collaborative MLEs?
- What particular attributes do you look for when selecting teachers to work in these MLE environments?
- Does the design of the space affect the way teachers work together?

- To what extent do you see it as important for a teacher to still be able to close off a space and work in a more private setting, within a MLE space? Is there still a role for more private practice?
- Do you see it as important for teachers to have a designated place to meet?

Phase 2 & 3 - Indicative interview questions – Children

General

- Tell me about going to school here. What's it like?
- What do you enjoy about learning here? What don't you enjoy?

Learning

- How do you know what learning you are doing during the day?
- Can you describe where you find the things that help with your learning?

Space

- Tell me about the place that you learn in at school? What do you like or dislike about it?
- How does this place help you learn? Can you explain?
- How you decide where you will learn? Are there some activities you prefer to do in certain places?
- Who decides where you do your learning? Do you get to choose?
- When you get to choose, where do you prefer to go?
- How does this environment for learning compare with other classrooms you have been in before?
- If you could change the environment to make it better, what would you do?

Teachers

- How many teachers do you have in your classroom?
- Who is your teacher?
- Do you have one teacher that you work with most often?
- Do you have conversations with each of them every day?
- When they are teaching do teachers work together or apart?
- Do teachers have their own part of the room?

Appendix 2: Plain language statements and consent forms

Attachment C: PLS Phase 1 adults



Plain Language Statement for Adult participants

Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Melbourne Graduate School of Education, The University of Melbourne

Dear _____

You are invited to participate in the above research project, which is being conducted by Mr Chris Bradbeer (Graduate researcher), and supervised by Dr Wesley Imms (Principal Supervisor) and Dr Benjamin Cleveland (Co-Supervisor) of the Melbourne Graduate School of Education at The University of Melbourne. This project will form part of Mr Bradbeer's Ph.D. thesis, and has been approved by the Human Research Ethics Committee.

The aim of the project is to explore the nature of teacher collaboration within primary school Modern Learning Environments (MLE) in New Zealand. It sits within the wider context of MLE design and implementation and looks particularly at the opportunities presented by shared teaching and learning spaces. The purpose of this research project is to investigate the pedagogical practices employed by a team of teachers working together in a shared modern teaching environment, and in particular to the systems and structures that support this action. The intention is to create a better understanding of the beliefs, principles and practice underpinning effective teacher collaboration in an MLE, in order to inform professional learning.

As someone with particular knowledge and expertise in the field of Modern Learning Environments in New Zealand, you are invited to participate in the initial research phase. Should you agree to participate, you would be asked to contribute in three ways. First an interview, (approximately 90 minutes), at a time convenient to you, exploring themes of MLE, collaboration, teaching and learning. Second, you would be asked to make some recommendations of potential research sites – schools utilising collaborative teaching practice within MLE in New Zealand. Finally you would be asked to make some recommendations of others with particular expertise in MLE to whom you think it would be worth interviewing.

With your permission, the interview would be audio-recorded so that I can ensure that I make an accurate record of what you say. When the recording has been transcribed, you would be provided with a copy of the transcript, so that you can verify that the information is correct and/or request deletions. I estimate that the total time commitment required of you would not exceed 90 minutes.

The potential risks to participants are expected to be minimal. I intend to protect your anonymity and the confidentiality of your responses to the fullest possible extent, within the limits of the law. In the final report, you will be referred to by a pseudonym. I will remove any references to personal information that might allow someone to guess your identity; however, you should note that as the number of people we seek to interview in this phase of the project is very small, it is possible that someone may still be able to identify you. Once the thesis arising from this research has been completed, a brief hardcopy summary of the findings will be available to you. It is possible that the results will be presented at academic conferences.

All primary data will be kept securely at The University of Melbourne for a minimum of five years after the date of any publication or public release of the research. Printed matter and audio files will be disposed of in accordance with The University of Melbourne code of conduct for research.

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

If you would like to participate, please indicate that you have read and understood this information by signing the accompanying consent form and returning it in the envelope provided. The researchers will then contact you to arrange

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a mutually convenient time for an interview.

Should you require any further information, or have any concerns, please do not hesitate to contact either the graduate researcher or his supervisors: Mr Chris Bradbeer on +64 21 2040 170, Dr Wes Imms on +61 3 8344 8783 or Dr Benjamin Cleveland on +61 3 90353757. Should you have any concerns about the conduct of the project, you are welcome to contact the Manager, Human Research Ethics, The University of Melbourne, Victoria 3010, ph: +61 3 8344 2073, or fax: +61 3 9347 6739.

Yours sincerely

Dr Wesley Imms (Principal Supervisor)

Ph: +61 3 8344 8783

email: w.imms@unimelb.edu.au

Mr Chris Bradbeer (Graduate researcher)

ph: +64 21 2040 170

email: c.bradbeer@student.unimelb.edu.au

Dr Benjamin Cleveland (Co-Supervisor)

ph: +61 3 90353757

email: benjamin.cleveland@unimelb.edu.au

CONSENT FORM for adult participants in research project

Project Title: Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Melbourne Graduate School of Education, The University of Melbourne

Name of graduate researcher: Mr Chris Bradbeer (Supervised by Dr Wesley Imms & Dr Benjamin Cleveland)



1. I consent to participate in the research project named above in order to assist with data collection. The project has been explained to me and I have read the Plain Language Statement. I understand that the project is for research purposes. I understand that the project is involved in investigating the pedagogical practices being employed by teachers working collaboratively within Modern Learning Environments (MLE) in New Zealand primary schools. I understand that I will be asked to participate in an interview, (approximately 90 minutes) and asked to make some recommendations of potential research sites – schools utilising collaborative teaching practice within MLE in New Zealand. I also understand that I may be asked to make some recommendations of others with particular expertise in MLE.
2. I acknowledge that:
 - a) I have read the written information (Plain Language Statement) about the project and have received a copy of that information.
 - b) The possible effects of the research project have been explained to me to my satisfaction.
 - c) I have been informed that the project is voluntary and that I am free to withdraw from the project at any time without explanation or prejudice and any unprocessed data previously supplied will be withdrawn.
 - d) I understand that participants may be audio-recorded.
 - e) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements.
 - f) A copy of the transcript will be returned to me for verification.
 - g) I understand that all efforts will be made to ensure confidentiality, and that a pseudonym will be used in any publications arising from the research. I understand that references to personal information that might allow someone to guess my identity will be removed. However, I note that as the number of people being interviewed in this phase of the project is very small, it is possible that someone may still be able to identify me.
 - h) I understand that this consent form is to be returned and retained by the researchers.
 - i) I understand I will be given a copy of the signed consent form to keep.

Name of participant: _____

Signature _____ Date _____

(Participant)

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Plain Language Statement for Principals

Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Melbourne Graduate School of Education, The University of Melbourne

Dear _____

I would like to invite your school to participate in the above research project, which is being conducted by Mr Chris Bradbeer (Graduate researcher), and supervised by Dr Wesley Imms (Principal Supervisor) and Dr Benjamin Cleveland (Co-Supervisor), of the Melbourne Graduate School of Education at The University of Melbourne. This project will form part of Mr Bradbeer's Ph.D. thesis, and has been approved by the Human Research Ethics Committee.

Your school has been recommended as one where teachers are teaching collaboratively within shared Modern Learning Environments.

Project summary

The aim of the project is to explore the nature of teacher collaboration within primary school Modern Learning Environments (MLE) in New Zealand. It sits within the wider context of MLE design and implementation and looks particularly at the opportunities presented by shared teaching and learning spaces. The purpose of this research project is to investigate the pedagogical practice employed by a team of teachers working together in a shared modern teaching environment, and in particular to the systems and structures that support this action. The project is particularly concerned with understanding the beliefs, principles and practice underpinning effective teacher collaboration in an MLE. This is seen as key in informing relevant professional learning.

The project is being conducted in three phases - Phase 1 (Interviews with experts), Phase 2 (Snapshot studies) and Phase 3 (In depth case study). Your school would be involved in the second, and possibly third phase. It is anticipated that Phase 2 (Snapshot studies) of the research should be completed in a visit of two days, early in 2015, at a time convenient to you and your team. Following collection of this data there may well be the opportunity to take part in the subsequent stage, if the school is interested. Phase 3 (In depth case study) will subsequently work in more depth with a team of teachers and be conducted over approximately six months with repeated visits and time spent in the MLE space. Through interviews, observations and photographs, information will be collected regarding the experience of teachers and students as they work and learn together in an MLE space.

Principal's Interview

In Phase 2 of study data collection will begin with an interview with you, as Principal of the school. This will investigate topics of MLE, teacher collaboration and professional learning. With your permission, the interview with you would be audio-recorded so that I can ensure that I make an accurate record of what you say. When the recording has been transcribed, you would be provided with a copy of the transcript, so that you can verify that the information is correct and/or request deletions. I estimate that the total time commitment required for the interview would not exceed 90 minutes.

Data collection in school

Next, data collection will include observations of students and teachers in two MLE environments as they participate in

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their everyday learning and teaching. Following this a focus group interview of 3-6 teachers will explore themes of teacher collaboration, teaching in a MLE, and models of learning and teaching. Finally a small focus group of 8-12 senior children will be used to collect student voice on their experiences, in a group interview (not exceeding 60 minutes). Throughout the course of the data collection photographs will be taken of the students and teachers learning and teaching MLE space. A plan will be requested of the MLE spaces.

Teachers, students and parents will be provided with a Plain Language Statement outlining the project, and will be asked to give their consent. This will include consent for the use of photographs. The photographs taken during the course of the research will be used as a form of data collection. They may be used as illustrations in the Ph.D. and subsequent publications or presentations, although will not be published in more generally accessible sites. If faces of children and adults are visible in the images, they will be digitally blurred prior to publication.

Phase 3 of study involves working in more depth. This will take place over a number of visits during the course of the year, and involve the student researcher spending time with one of your MLE teaching teams. It aims to build an understanding of the way that teachers work together. During the visits the student researcher will be present in the Modern Learning Environment as teachers and students go about their routines. This will include during teaching and learning times, team meetings and staff professional learning. Data will be collected through the use of observational field notes and photographs, as well as copies of relevant timetables and documentation that shows details of the organisation of teachers and students. Members of the teaching team would be asked to participate in three individual interviews that will each take about 60 minutes. The researcher will ask to work with the focus group of students. This would consist of an individual task taking photographs, and recording an interview aimed at understanding the student perspective of learning in a collaboratively taught MLE. These students and their parents/ caregivers will be asked for permission for this.

Your involvement

The potential risks to participants are expected to be minimal. I intend to protect your anonymity and the confidentiality of your responses to the fullest possible extent, within the limits of the law. In the final report, you will be referred to by a pseudonym. I will remove any references to personal information that might allow someone to guess your or your school's identity; however, you should note that as the number of people I seek to interview in this phase of the project is very small, it is possible that someone may still be able to identify you. Once the thesis arising from this research has been completed, a brief hardcopy summary of the findings will be available to you. It is possible that the results will be presented at academic conferences.

Since the research is interested in the teaching team's normal practice, the researcher will try to keep as unobtrusive as possible. Your teachers, students and their parents/ caregivers will be asked for permission, and only the interactions for the students for whom permission is given will be used in research.

All primary data will be kept securely at The University of Melbourne for a minimum of five years after the date of any publication or public release of the research. Printed matter and audio files will be disposed of in accordance with The University of Melbourne code of conduct for research.

Please be advised that your school's participation in this study is completely voluntary. Should you wish to withdraw your school from the project any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

If you would like to participate, please indicate that you have read and understood this information by signing the accompanying consent form and returning it in the envelope provided. The consent form requests consent for your individual involvement as principal, and consent for the school to participate. The researcher will then contact you to arrange a mutually convenient time for an interview.

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Should you require any further information, or have any concerns, please do not hesitate to contact either the graduate researcher or his supervisors: Mr Chris Bradbeer on +64 21 2040 170, Dr Wes Imms on +61 3 8344 8783 or Dr Benjamin Cleveland on +61 3 90353757. Should you have any concerns about the conduct of the project, you are welcome to contact the Manager, Human Research Ethics, The University of Melbourne, Victoria 3010, ph: +61 3 8344 2073, or fax: +61 3 9347 6739.

Yours sincerely

Dr Wesley Imms (Principal Supervisor)
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CONSENT FORM for adult participants in research project

Project Title: Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Melbourne Graduate School of Education, The University of Melbourne

Name of graduate researcher: Mr Chris Bradbeer (Supervised by Dr Wesley Imms & Dr Benjamin Cleveland)



1. I understand that the project is involved in investigating the pedagogical practices being employed by teachers working collaboratively within Modern Learning Environments (MLE) in New Zealand primary schools, and that my school is being asked to participate in Phase 2 and possibly Phase 3 of the project. The project has been explained to me and I have read the Plain Language Statement. I understand that the project is for research purposes.
2. **Consent to participate as a Principal:** As a research participant I consent to participate in the research project named above in order to assist with data collection. I understand that I will be asked to participate in an interview that will be audio recorded (approximately 90 minutes). I understand that I will be asked to make recommendations about potential teacher participants to participate in a focus group.
3. **Consent for my school to participate:** As Principal of _____ School I consent for the school to participate in the research project named above in order to assist with data collection. I understand that students and teachers will be observed going about their everyday activities and that some students and teachers may be photographed (but faces will be blurred in any published images). I understand that a group of students will be asked to participate in a focus group (approximately 60 minutes). I understand that the graduate researcher may request plans of the MLE layout. I understand that Phase 3 of the research (should my school wish to be involved) will involve repeated visits by the graduate researcher, over approximately a six-month period, in order to observe everyday practice of teachers and students. I understand that this will involve observing teaching times, team meetings and professional learning, and the collection of supporting documentation. I understand that teachers will be asked to participate in a series of interviews (approximately 60 minutes) and that a group of students will take part in focus group activities, as well as an individual interview (no longer than 30 minutes). I understand that visits by the graduate researcher, as well as timing of interviews and focus groups will be negotiated with the relevant teachers and myself.
4. I acknowledge that:
 - a) I have read the written information (Plain Language Statement) about the project and have received a copy of that information.
 - b) The possible effects of the research project have been explained to me to my satisfaction.
 - c) I have been informed that the project is voluntary and that I am free to withdraw from the project at any time without explanation or prejudice and any unprocessed data previously supplied will be withdrawn.
 - d) I understand that my interview may be audio-recorded and that a copy of the transcript will be returned to me for verification.
 - e) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements.

Continued over

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- f) I understand that all efforts will be made to ensure confidentiality, and that a pseudonym will be used in any publications arising from the research. I understand that references to personal information that might allow someone to guess my identity will be removed. However, I note that as the number of schools being interviewed in the project is very small, it is possible that someone may still be able to identify the school or personnel.
- g) I understand that this consent form is to be returned and retained by the researchers.
- h) I understand I will be given a copy of the signed consent form to keep.

Name of participant: _____

Name of School: _____

Signature _____ Date _____

(Principal)



Plain Language Statement for Adult participants (Teachers)

Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Melbourne Graduate School of Education, The University of Melbourne

Dear _____

You are invited to participate in the above research project, which is being conducted by Mr Chris Bradbeer (Graduate researcher), and supervised by Dr Wesley Imms (Principal Supervisor) and Dr Benjamin Cleveland (Co-Supervisor), of the Melbourne Graduate School of Education at The University of Melbourne. This project will form part of Mr Bradbeer's Ph.D. thesis, and has been approved by the Human Research Ethics Committee.

Your school has been recommended as one where teachers are teaching collaboratively within shared Modern Learning Environments.

The aim of the project is to explore the nature of teacher collaboration within primary school Modern Learning Environments (MLE) in New Zealand. It sits within the wider context of MLE design and implementation and looks particularly at the opportunities presented by shared teaching and learning spaces. The purpose of this research project is to investigate the pedagogical practice employed by a team of teachers working together in a shared modern teaching environment, and in particular to the systems and structures that support this action. The intention is to create a better understanding of the beliefs, principles and practice underpinning effective teacher collaboration in an MLE, in order to inform professional learning.

The project is being conducted in three phases - Phase 1 (Interviews with experts), Phase 2 (Snapshot studies) and Phase 3 (In depth case study). Your school would be involved in the second, and possibly third phase. It is anticipated that Phase 2 (Snapshot studies) of the research should be completed in a visit of two days, early in 2015, at a time convenient to you and your team. Following collection of this data there may well be the opportunity to take part in the subsequent stage, if the school is interested. Phase 3 (In depth case study) will subsequently work in more depth with a team of teachers and be conducted over approximately six months with repeated visits and time spent in the MLE space. Through interviews, observations and photographs, information will be collected regarding the experience of teachers and students as they work and learn together in an MLE space.

In Phase 2 of study data collection will begin with an interview with the Principal of the school. This will investigate topics of MLE, teacher collaboration and professional learning. Next, data collection will include observations of students and teachers in two MLE environments as they participate in their everyday learning and teaching. Following this a focus group interview of 3-6 teachers (approximately 60 minutes), will explore themes of teacher collaboration, teaching in a MLE, and models of learning and teaching. Finally a small focus group of 8-12 senior children will be used to collect student voice on their experiences in a group interview (not exceeding 60 minutes). Throughout the course of the data collection photographs will be taken of the students and teachers learning and teaching MLE space.

Phase 3 of study involves working in more depth. This will take place over a number of visits during the course of the year, and involve the graduate researcher spending time with one of your MLE teaching teams. It aims to build an understanding of the way that teachers work together. During the visits the graduate researcher will be present in the Modern Learning Environment as teachers and students go about their routines. This will include during teaching and learning times, team meetings and staff professional learning. Data will be collected through the use of observational field notes and photographs, as well as copies of relevant timetables and documentation that shows details of the

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organisation of teachers and students. Members of the teaching team would be asked to participate in three individual interviews that will each take about 60 minutes. The researcher will ask to work with the focus group of students. This would consist of an individual task taking photographs, and recording an interview aimed at understanding the student perspective of learning in a collaboratively taught MLE. These students and their parents/ caregivers will be asked for permission for this.

The potential risks to participants are expected to be minimal. I intend to protect your anonymity and the confidentiality of your responses to the fullest possible extent, within the limits of the law. In the final report, you will be referred to by a pseudonym. I will remove any references to personal information that might allow someone to guess your or your school's identity; however, you should note that as the number of people I seek to interview in this phase of the project is very small, it is possible that someone may still be able to identify you. Once the thesis arising from this research has been completed, a hardcopy summary of the findings will be available to you. It is possible that the results will be presented at academic conferences. The photographs taken during the course of the research will be used as a form of data collection. They may be used as illustrations in the Ph.D. and subsequent publications or presentations, although will not be published in more generally accessible sites. If faces of children and adults are visible in the images, they will be digitally blurred prior to publication.

Since the research is interested in the team's normal practice, the researcher will try to keep as unobtrusive as possible. Your students and their parents/ caregivers will be asked for permission, and only the interactions for the students for whom permission is given will be used in research.

All primary data will be kept securely at The University of Melbourne for a minimum of five years after the date of any publication or public release of the research. Printed matter and audio files will be disposed of in accordance with The University of Melbourne code of conduct for research.

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

If you would like to participate, please indicate that you have read and understood this information by signing the accompanying consent form and returning it in the envelope provided. The researchers will then contact you to arrange a mutually convenient time for an interview.

Should you require any further information, or have any concerns, please do not hesitate to contact either the graduate researcher or his supervisors; Mr Chris Bradbeer on +64 21 2040 170, Dr Wes Imms on +61 3 8344 8783 or Dr Benjamin Cleveland on +61 3 90353757. Should you have any concerns about the conduct of the project, you are welcome to contact the Manager, Human Research Ethics, The University of Melbourne, Victoria 3010, ph: +61 3 8344 2073, or fax: +61 3 9347 6739.

Yours sincerely

Dr Wesley Imms (Principal Supervisor)

Ph: +61 3 8344 8783

email: w.imms@unimelb.edu.au

Mr Chris Bradbeer (Graduate Researcher)

ph: +64 21 2040 170

email: c.bradbeer@student.unimelb.edu.au

Dr Benjamin Cleveland (Co-Supervisor)

ph: +61 3 90353757

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CONSENT FORM for adult participants (Teachers) in research project

Project Title: Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Name of graduate researcher: Mr Chris Bradbeer (Supervised by Dr Wesley Imms & Dr Benjamin Cleveland)



1. I consent to participate in the research project named above in order to assist with data collection. The project has been explained to me and I have read the Plain Language Statement. I understand that the project is for research purposes. I understand that the project is involved in investigating the pedagogical practices being employed by teachers working collaboratively within Modern Learning Environments (MLE) in New Zealand primary schools, and that my school is being asked to participate in Phase 2 and possibly Phase 3 of the project. I understand that students and teachers will be observed going about their everyday activities and that some students and teachers may be photographed (but faces will be blurred in any published images). I understand that I will be asked to participate in a teacher focus group (approximately 60 minutes). I understand that a group of students will be asked to participate in a focus group (approximately 60 minutes), and that I will be asked to help with collection of consent forms and selection of participants. I understand that Phase 3 of the research (should my school wish to be involved) will involve repeated visits by the graduate researcher, in order to observe everyday practice of teachers and students. I understand that this will involve observing teaching times, team meetings and professional learning, and the collection of supporting documentation. I understand that I will be asked to participate in a series of interviews (approximately 60 minutes) and that a group of students will take part in focus group activities, as well as an individual interview (no longer than 30 minutes). I understand that visits by the graduate researcher, as well as timing of interviews and focus groups will be negotiated with the relevant teachers and the principal.
2. I acknowledge that:
 - a) I have read the written information (Plain Language Statement) about the project and have received a copy of that information.
 - b) The possible effects of the research project have been explained to me to my satisfaction.
 - c) I have been informed that the project is voluntary and that I am free to withdraw from the project at any time without explanation or prejudice and any unprocessed data previously supplied will be withdrawn.
 - d) I understand that participants may be audio-recorded and that a copy of my transcript will be returned to me for verification.
 - e) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements.
 - f) I understand that all efforts will be made to ensure confidentiality, and that a pseudonym will be used in any publications arising from the research. I understand that references to personal information that might allow someone to guess my identity will be removed. However, I note that as the number of schools being interviewed in the project is very small, it is possible that someone may still be able to identify the school or personnel.
 - g) I understand that this consent form is to be returned and retained by the researchers.
 - h) I understand I will be given a copy of the signed consent form to keep.

Name of participant: _____

Signature _____ Date _____

(Teacher)

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Would you like to help us do some research about Teaching & Learning in Modern Learning Environments?

Melbourne Graduate School of Education, The University of Melbourne



Dear Parent/ Guardian

I am a graduate researcher from the Melbourne Graduate School of Education at the University of Melbourne. I am currently undertaking research towards my Ph.D. and am being supervised by Dr Wesley Imms (Principal Supervisor) and Dr Benjamin Cleveland (Co-Supervisor). This project will form part of my thesis, and has been approved by the Human Research Ethics Committee.

I am trying to find out about what it is like being a teacher and a student in a Modern Learning Environment. This is seen as important in supporting relevant professional learning for other schools using this approach. Your child's school has been recommended as a suitable site to undertake this in. The project is being conducted in three phases. Your child's school will be involved in the second and possibly third phase.

As this research involves working with children, it is important that as a parent or guardian you are given information about the research. You then have the opportunity to decide if you are happy that your child is involved.

Firstly I am requesting to be able to take photographs in the classroom that may include your child. These will be photographs of children and teachers participating in everyday learning and teaching activities. The photographs taken during the course of the research will be used as a form of data collection. They may be used as illustrations in the Ph.D. and subsequent publications or presentations, although will not be published in more generally accessible sites. If faces of children and adults are visible in the images, they will be digitally blurred prior to publication.

I would also really like a group of children to help by being part of a focus group, as they have their own views on learning and learning environments. If you think your child might like to help me then please read this information sheet carefully. It will answer some questions you might have about what I am planning to do.

What will the research involve if I decide to let my child take part in the focus group?

As a member of the focus group, your child will be asked to participate in the following activities:

- One morning session (no longer than 60 minutes, held in normal class time). This will be a group conversation with about 8-12 children. It will cover such topics as the places where they learn best, how they choose where to learn, the learning that they do with different teachers, and how learning is organised.

There may be a further opportunity for your child to participate again later in the year should the school be interested in being part of the next stage of the research project (This will involve the researcher visiting the school on a number of occasions over a six-month period). In which case as a member of the focus group, your child will be asked to participate in the following activities:

- A group activity focusing on a particular aspect of learning in a Modern Learning Environment. This will include taking photographs of the classroom environment and will be followed by with a discussion based on the photographs. This will take no longer than 90 minutes, including normal breaks, and will be held during class time.
- A short individual interview about learning in a Modern Learning Environment (approximately 30 minutes). Questions will relate to a number of topics, for example, how they describe their learning environment, the way that they use the learning space, the parts they like, or don't like so much, the way they learn with multiple teachers, and the way that learning is organised. The interview will be conducted in an appropriate place in the school, most likely part of the classroom or an adjoining space. The researcher will ensure that the place selected is visible to school staff. The interview will be audio recorded so that I can make an accurate record of what is said.

I will be audio recording these sessions, and outputs from the sessions including drawings, writing, photographs, may be used in research reports.

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I have considerable experience of working with children, being a practicing teacher (and currently an Associate Principal) in New Zealand with twenty years' experience. I can assure you that all sessions will be conducted in a professional, sensitive and non-stressful manner.

Does my child have to take part?

Participation is completely voluntary. It is up to you and your child to decide whether to take part. To inform your decision please consider what is in this Plain Language Statement and contact the researcher, your teacher, or the Principal if you have any questions. Please use the children's information sheet and consent forms provided to have a conversation with your child about what participation entails and whether they would like to be involved.

Can we change our mind?

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

Will things that my child says be kept private?

Yes, only the other children helping us from their school and the researcher will know what they say. The final report will not use their name or the name of your school.

The potential risks to participants are expected to be minimal. We intend to protect your child's anonymity and the confidentiality of their responses to the fullest possible extent, within the limits of the law. In the final report, your child will be referred to by a pseudonym. We will remove any references to personal information that might allow someone to guess your child's or your school's identity. However, you should note that as the number of people we seek to interview in this phase of the project is small, it is possible that someone may still be able to identify participants. Once the thesis arising from this research has been completed, a brief hardcopy summary of the findings will be available to you. It is possible that the results will be presented at academic conferences and in reports and papers.

All primary data will be kept securely at The University of Melbourne for a minimum of five years after the date of any publication or public release of the research. Printed matter and audio files will be disposed of in accordance with The University of Melbourne code of conduct for research.

How will we find out about the results of the research?

The school will receive a summary of the research findings on completion of the project. This will be available to parents of children who have participated.

How can I find out more about the study?

Should you require any further information, or have any concerns, please do not hesitate to contact either the graduate researcher or his supervisors: Mr Chris Bradbeer on +64 21 2040 170, Dr Wes Imms on +61 3 8344 8783 or Dr Benjamin Cleveland on +61 3 90353757. Should you have any concerns about the conduct of the project, you are welcome to contact the Manager, Human Research Ethics, The University of Melbourne, Victoria 3010, ph: +61 3 8344 2073, or fax: +61 3 9347 6739.

Yours sincerely

Dr Wesley Imms (Principal Supervisor)

Ph: +61 3 8344 8783

email: w.imms@unimelb.edu.au

Dr Benjamin Cleveland (Co-Supervisor)

ph: +61 3 90353757

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Mr Chris Bradbeer (Graduate Researcher)

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CONSENT FORM (Parents/ Guardian of behalf of child participants)

Project Title: Co-habitation, collaboration and co-construction: exploring multiple alignments of collaborative teacher practice within Modern Learning Environments.

Name of graduate researcher: Mr Chris Bradbeer (Supervised by Dr Wesley Imms & Dr Benjamin Cleveland)

1. I consent for my child to participate in the research project named above in order to assist with data collection. The project has been explained to me and I have read the Plain Language Statement. I understand that the project is for research purposes. I understand that the project is involved in investigating the teaching practices being employed by teachers working collaboratively within Modern Learning Environments (MLE) in New Zealand primary schools, and that my school is being asked to participate in Phase 2 and possibly Phase 3 of the project. I understand that students and teachers will be observed going about their everyday activities and that some students and teachers may be photographed (but faces will be blurred in any published images). I understand that a group of students will be asked to participate in a focus group (approximately 60 minutes) and that I can discuss with my child whether they would like to be involved. I understand that Phase 3 of the research (should my school decide to be involved) will involve repeated visits by the graduate researcher in order to observe everyday practice of teachers and students. I understand that the focus group of students will take part in focus group activities, as well as an individual interview (no longer than 30 minutes). I understand that visits by the graduate researcher, as well as timing of interviews and focus groups will be negotiated with the relevant teachers and the Principal.
2. I acknowledge that:
 - a. I have read the written information (Plain Language Statement) about the project and have received a copy of that information.
 - b. The particulars of the research study - including aims of the research, details of data collection methods and possible risks have been explained to me to my satisfaction – including my child answering questions about learning in a Modern Learning Environment.
 - c. I have been informed that the project is voluntary and that my child is free to withdraw from the project at any time without explanation or prejudice and any unprocessed data previously supplied will be withdrawn.
 - d. I understand that participants may be audio-recorded.
 - e. I understand the information that my child provides will be coded and kept separately from their name.
 - f. I have been informed that the confidentiality of the information provided will be safeguarded subject to any legal requirements.
 - g. I understand that results will be used for research purposes and may be reported in academic and professional reports and presentations.

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- h. A written copy of the information has been given to me to keep. I understand that the research is being conducted in three phases and that I am giving consent for my child to be involved in Phase 2, and possibly Phase 3 if the school decides to be involved.
- i. I understand that this consent form is to be returned and retained by the researchers.
- j. I understand I will be given a copy of the signed consent form to keep.

I, _____ (Name)

of _____

_____ (Address),

consent for my child, _____ (Child's name),

to be a participant in the research project to be undertaken by the graduate researcher, Mr Chris Bradbeer. I understand that the purpose of the research is to contribute to the project named above.

I consent to photographs containing my child to be used in the research, on the understanding that individual's faces will be blurred to prevent identification

Yes ☐

No ☐ (Please tick one)

I consent to my child taking part in the focus group, if they are selected

Yes ☐

No ☐ (Please tick one)

I consent to my child taking part in an individual interview as part of Phase 3 of the research (if the school and child are selected)

Yes ☐

No ☐ (Please tick one)

Signature _____ Date _____

(Parent)

Would you like to help me do some research about Teaching & Learning in Modern Learning Environments?



Hello, my name is Chris Bradbeer and I am a Ph.D. student and a graduate researcher from the Melbourne Graduate School of Education at The University of Melbourne, in Australia. I am trying to find out about what it is like being a teacher and a student in a Modern Learning Environment. I would really like a group of children to help me with this, as you have their own views on learning and learning environments.

So would you like to help?

If you think you might like to help me then please read this information sheet carefully. It will answer some questions you might have about what we are going to do.



I am trying to find out about the way that Modern Learning Environments work, and in particular to understand what learning and teaching looks like in a place where a team of teachers works together. This is really useful for teachers in other schools to know about.

What are you trying to find out?

I will be spending time in your classroom over the next year. I'll be observing what learning and teaching looks like, writing some notes and taking some photographs. It's possible you might be in some of them. I'll also be talking to your Principal, to teachers and to students.

How will you do this?

I think it's really important to hear what children think about the environments that they learn in. So I would like to get a small group of children together to talk to. This is called a focus group. I'd also like to know if you are happy that you may be in some photographs.

Why do you need my help?

What happens if I decide to take part in the focus group?

I will come to your school and meet you for about 60 minutes. I will work with a group of 8-12 children and have a conversation that will help me learn what it is like being a student in a Modern Learning Environment with a number of teachers. Later in the year I may meet with the group again on two occasions. I will ask you to take some photographs and to share your ideas with the same group. I would also like to record a short interview with you. This will take about 30 minutes.

Do I have to take part?

No

It is up to you and your parents to decide whether you take part or not. If you do want to I would like you to take this home and talk to them about it. If they are OK with you helping, they need to sign the form with the letter. There is a form for you to sign too.

What if I say yes and then change my mind?

That's OK

You can change your mind at any stage if you decide to. You don't even need to give me a reason.

Will things I say and do be kept private?

Yes

Only the other children in the focus group and the researcher will know what you say. I won't even use your real name in the report I write at the end of the project. You can make up your own name to be used if you like. Also if I use a photo with you in it, I will blur your face so you can't be recognised.

What do I do if I want to find out more?

You can talk to your teacher, your Principal and your parents. Or you can email me on c.bradbeer@student.unimelb.edu.au. Alternatively you can contact my supervisors. Their details are available on your parent's information sheet.

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Consent form for Children



My name is...

I have read the information sheet and understand what I am being asked to do

Yes

No



Please tick one of the boxes each time

Yes, I would like to help the researcher from The University of Melbourne

☐

No, I do not want to want to be part of the research

☐

Yes, I'm happy that photos with me in them are used

☐

No, I'd prefer that photos with me in them are not used

☐

Yes, I would like to be part of the focus group

☐

No, I'd prefer not to be part of the focus group

☐

...and sign here:

If you are in the focus group, when I write about the ideas you have shared with me, I won't use your real name.



Do you have a name you would like me to use as a pseudonym when I talk about your ideas?

If you do, write it here:

Thank you. I look forward to working with you.

Chris Bradbeer

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