

TEACHERS AS PLACEMAKERS: HOW PRIMARY SCHOOL TEACHERS
DESIGN, MANAGE AND MAINTAIN LEARNING SPACES AS PART OF
THEIR DAILY WORKFLOW

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Abstract

This inquiry is a hypothesis generating study that explores how a group of fifteen primary school teachers across five sites in rural Queensland, Australia, design, manage and maintain learning spaces, as they go about the business of their daily work. The study uses qualitative data in the form of photographs taken by the participants and in-depth interviews using photo-elicitation methods, to generate a substantive theory that accounts for how the participants engage in placemaking. Placemaking is proposed as an integrating concept to explain theoretically, how participants achieve their central purpose in relation to learning space design, management and maintenance. The application of the holistic, contextual, transactional and systems oriented perspective from environmental psychology, is a key contribution of this study.

Given the important social functions of schools, the public capital invested in education facilities, and the shift from 20th to 21st century learning environments being driven by social, economic, technological and political factors, furthering our understanding of how the occupants of school spaces experience these spaces is considered a worthy endeavour. In the past decade, there has been an increased interest in the design of learning spaces presumed to improve learning, especially academic outcomes for students. This interest has sparked a range of investigations across the economically developed world into how environmental variables influence learning. Scant attention has been given to how the same environments affect the behavior of teachers who have agency to design, manage and maintain the learning spaces in which they operate in on a daily basis. The aim of this study is understanding how teachers think about and act in learning spaces to achieve the outcomes of schooling they strive for on behalf of students and the community. Primary school teachers in the context of their daily design, management and maintenance of learning spaces form the substantive field for this investigation as these teachers are often allocated bounded spaces for significant periods of time and with the same cohorts of students.

The primary research questions were constructed in classic, Glaserian grounded theory terms as:

1. What is the main concern of primary school teachers as they design, manage and maintain learning spaces as part of their daily workflow?
2. How do primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
3. What theoretically accounts for the ways that primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
4. What practical implications for primary school teachers and education facilities planners, derive from understanding how primary school teachers resolve their main concern associated with their engagement with learning spaces as part of their daily workflow?

The term, main concern, in this context refers to the intentions of participants and how they achieve these intentions through categories of behaviour. 'Main concern' is used as a technical term consistent with Glaserian grounded theory methodology.

Grounded theory analysis methods were used to generate the core intentions ('main concern' in classic grounded theory terms) of fifteen rural based primary school teachers in relation to the primary research question. Four substantive categories or patterns of behavior reported by teachers as core to the achievement of their intentions as learning space managers, were generated along with a theoretical category, 'Placemaking', that accounts for the variability in primary teacher behavior in context. 'Placemaking' is proposed as a basic psychosocial process engaged in by teachers as they interact with learning spaces on a daily basis.

Implications of the perspective of teachers as 'placemakers' are outlined and include: the protective nature of establishing a positive psychological sense of place; the possibilities that 'placemaking' has for enhancing the teaching / learning subjective experience and therefore the long-term holistic outcomes of schooling; and the possible impact of place-making on combating student alienation, enhancing resilience, reducing student disengagement and increasing a sense of belonging. These are seen as protective factors in student development and wellbeing. They are likewise protective factors for teacher health and wellbeing.

Recommendations are offered to help teachers, education facilities planners and school communities to engage proactively in developing a 'placemaking master plan' for schools and learning spaces. Contributions to the fields of education, environmental psychology and research methodology are offered.

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Chapter 1: Introduction

In synergistic fashion, one process activates and is activated by others in a vibrant dynamism that Jane Jacobs (1961, ch. 22) identified as “organized complexity”—a sophisticated synergy of intricately intertwined elements, processes, and relationships always in flux, sometimes evolving and sometimes devolving in their degree of connectedness, coherence, resonance, and life (Seamon, 2014)

1.1 Background to study

This grounded theory study of how a group of fifteen rural Australian primary school teachers design, manage and maintain learning spaces as part of their daily workflow makes a contribution to the corpus of knowledge and understanding in environmental psychology and education at the applied and theoretical levels. The substantive theory generated by this research project represents an extension to existing theory that helps to account for human behavior in context, and in particular the main concerns of primary teachers as they engage with learning spaces on a daily basis and how they resolve these concerns. The term, main concern, in this context refers to the intentions of participants and how they achieve these intentions through categories of behaviour. ‘Main concern’ is used as a technical term consistent with Glaserian grounded theory methodology.

There are six main sources of relevance for such a study at this time. They are outlined below and lead to the explication of the research goals, questions and design. These

1.1.1 Goals of Environmental Psychology

This study aligns with environmental psychology’s agenda to enhance the welfare of people-in-environments and environments themselves (Bechtel & Churchman, 2002; Bonaiuto & Bonnes, 2000; Bonnes & Bonaiuto, 2002; Gifford, 1987; Gifford, Steg, & Reser, 2011; Stokols & Altman, 1987; Wapner, 2000). I focus on a substantive field (primary teachers and learning spaces) that has significant impact on life outcomes for whole populations of people. Understanding the ways that those who occupy learning environments, make decisions about how they are designed, managed and maintained to achieve the purposes for which they have been established in society, is consistent with the applied orientation of environmental psychology.

This pragmatic orientation in environmental psychology is one of its strengths and it is a positive force in helping to address ongoing and emerging issues relating to how people experience and impact on environments. Studies of the impacts of toxins, disasters, crowding, urban expansion, mobility, transport, forced dislocation, pollution, mining and high-rise living are all matters of concern for environmental psychology (Altman & Stokols, 1987; Bechtel & Churchman, 2002). The positive or restorative impacts of natural environments are also an area of investigation (Hartig, Evans, Jamner, Davis, & Gärling, 2003; Korpela, Kyttä, & Hartig, 2002). These

broad areas of study are complemented in environmental psychology by the study of the impact of environmental variables on human experience. The effects of natural and artificial lighting, air quality, noise, density of occupation, colour of walls and floors, furniture type and arrangements, ceiling heights, temperature, opportunity for movement and vistas; on office workers, prisoners, hospital patients, youth detention centres, schools, churches and other sites of human activity have all been the subject of investigation by environmental psychologists (Bellia, Pedace, & Barbato, 2013; Chiang & Lai, 2008; Chithra & Shiva Nagendra, 2012; Cook, 1990; Giuliani & Scopelliti, 2009; Krüger & Zannin, 2004; Montazami, Wilson, & Nicol, 2012; Rivlin & Wolfe, 1985; Stansfeld et al., 2009).

Currently, the transactional, person-in-environment perspective has been widely accepted in environmental psychology and proposes that studies of human-environment systems must consider contextualized relational patterns of mutual influence in the human-environment milieu (Bonnes & Secchiaroli, 1995; Wapner, Demick, & Yamamoto, 2000; Werner & Altman, 2000). The investigation of the impact of isolated environmental variables on human experience, behaviour and performance has given way to more holistic, systems oriented approaches, at least at the level of theory. Applied research is still conducted using the molecular research approaches of the past and will most likely continue into the future, although in a more holistic fashion as evidenced by a recent study of the impact of classroom design on student learning outcomes (Peter Barrett, Zhang, Moffat, & Kobbacy, 2013).

Of particular interest to this study is environmental psychology's longstanding interest in school settings (Barker & Gump, 1964; Barker, 1968; Gump, 1978; King & Marans, 1979; L. G. Rivlin & Wolfe, 1985; Rivlin & Weinstein, 1984; Weinstein & Woolfolk, 1981). Weinstein (1979) conducted an often-cited review of the research that covered over a decade of studies of the physical environment of the school up to that time. Leanne Rivlin (1985) and her colleagues conducted a research program concerned with children and society's institutions over a fifteen-year period. Beginning with her work at the Environmental Psychology Program of the City of New York University in the 1970s, Rivlin and her colleagues studied the impact of institutional settings in children's lives. These settings included psychiatric hospitals for children, schools and day care centres (Rivlin & Wolfe, 1985).

Roger Barker's work through the Midwest Psychological Field Station at the University of Kansas, provided insights into the impact of large versus small school settings on student behavior (Barker & Gump, 1964; Schoggen, 1989). Barker's work in developing a theory of behavior settings and their predictive power when considering en masse behavior patterns was applied to educational settings including traditional elementary school settings, open plan settings and preschool settings. Observational techniques with dense recording strategies that allowed for sophisticated statistical analysis were largely applied in this research. Evidence grew of the need in psychology to move beyond a strict focus on the individual to the individual in context and the role of environments in shaping individual and en masse behaviour (Barker, 1968; Schoggen, 1989).

For two decades, interest in environmental variables such as: lighting, noise, temperature, air quality, vistas, mobility, furniture, colour, and physical dimensions in learning spaces has dominated the environmental psychology contribution to understanding learning space dynamics (Lackney, 1994; Lippman, 2010; Moore, 1994; Tanner, 2006; Woolner, 2010). The main focus of research has been on the

search for evidence of the impact of environmental variables on academic outcomes. Despite the voluminous literature reporting on research projects of the molecular kind (Bonnes & Secchiaroli, 1995), lack of consensus on how environmental variables impact on learning outcomes still exists. More recent insights into people-in-environment transactions have advocated for research of a more ecological and holistic nature. These concepts are elaborated in Chapter 3.

Regardless of the research methods applied, environmental psychology has demonstrated a steadfast commitment as a discipline to a better understanding of the relationship between people and the environments they occupy so that the welfare of both can be enhanced in the long term. This study contributes to that agenda. Understanding how primary school teachers make decisions and act in their daily work to design, manage and maintain learning spaces can facilitate the generation of practical recommendations that could have a positive impact on the welfare of teachers and students. Such understanding can also enhance learning outcomes and the subjective experience of being in a learning space.

1.1.2 Public investment in educational facilities

Formal education in the modern world is still largely place based, despite the emergence of virtual learning spaces to provide alternatives to their physical counterparts. This is particularly so in the case of primary education where the education of children in schools takes place during the daylight hours of what is considered the working week for a large part of the population. So entrenched are the educational programs and the associated social and physical structures to support them that the fabric of the population's lives is built around them to a large degree. Imagine the impact of a sudden and long-term closure of public and private school systems on the lives of parents, children, and communities. The economic cost would be unbearable and social unrest could threaten political and economic systems.

Public investment in education reflects the importance placed on this dimension of modern life. A review of capital investment highlights the point that educational facilities alone require considerable and ongoing investment by the public to sustain the current ways of educating society's young through essentially place-based systems. The educational facilities needed to house educational programs delivered as part of society's ongoing commitment to compulsory education for children and young people between the ages of four and sixteen, are costly and require constant maintenance throughout a limited lifespan. The associated costs in educational facilities provision are increasing and this is being driven by a number of factors. In the United Kingdom for instance, Patel (2005) reported that expenditure on school facilities for England would be 6.3 billion GBP in 2007/08 compared with 700 million GBP in 1996/97. In November 2013, the UK Department for Education reported that 4 billion GBP were allocated to create new school places (Basic Needs Funding) and to carry out maintenance on existing school buildings for the period 2013-15. Rorris (2009) reported that the per capita funding equivalent funding spent on public school capital in the UK had doubled between 2002 and 2006.

In the Australian context, capital expenditure on school facilities was given an unusual boost as a response by the Federal Government to the Global Financial Crisis in 2008. The then Federal Government injected around \$16 billion into a building program designed to stimulate the Australian economy and protect it from

recession. \$14.1 billion of these funds went into the Primary Schools for the 21st Century program across the period 2008-09 to 2011-12. The funding program was called Building the Education Revolution. A taskforce was established to report on the progress of the expenditure and determined that across the state, Catholic and independent school sectors, the funds were expended on the building of new schools, general-purpose classrooms, specialist facilities, staff and administration, amenities areas, refurbishment of classrooms, computer rooms and boarding facilities. Libraries, science, performing arts, sports gymnasiums and technology enhancements were common (Building the Education Revolution Taskforce, 2011). With this significant injection of funds for the short term, Australia's capital expenditure on school facilities grew by 400% from 2004-05 to 2009-10 (Australian Curriculum & Reporting Authority, 2013.). This level of expenditure (\$7.6 billion in 2009-10) will not be sustained as the 'Building the Education Revolution' program was terminated in 2010. The current level (2013-14) of capital funding for schools in Australia would reasonably be expected to achieve at least the pre Global Financial Crisis levels of around \$2 billion. This level of funding has been demonstrated to compare poorly with other developed economies such as the USA and the UK on a per capita basis. Still, these are substantial costs to the community and they are ongoing and likely to increase. The drivers for this are discussed in Chapter 3.

Given these considerable investments in educational facilities in developed world economies, the emerging educational needs of developing economies such as India, and the need to enhance rather than just to maintain existing facilities for the future educational needs of society, understanding the challenges that working in these facilities presents for teachers and how they resolve these individually and collectively is an important research objective.

1.1.3 Transition from 20th to 21st Century Educational Contexts

One of the significant drivers of change in the design, management and maintenance of educational facilities is the ongoing evolution of educational practices associated with changes in the nature of life in a globalized social, political and economic environment. Developments in learning theory and in particular the impact of technology-enhanced environments are also significant drivers of change in this field. These issues are further discussed in Chapter 3.

The recent interest in the impact of learning spaces on educational practices is contextualized by the necessity for educational institutions and systems to respond to the challenges presented by the 21st century. Globalisation, information communication technology, the shift from primary and secondary industries to service/knowledge-based economies, the concern over sustainability, the rising standards of living in developing economies, the information explosion, the evolution of learning intensive societies, and a reshaping of what is considered basic learning needs for thriving in complex rich environments; are among some of the challenges being presented to educators, education facilities planners, communities and politicians at present (Bernard, 2012; JISC e-Learning and Innovation Team, 2006; Miller, Shapiro, & Hilding-Hamann, 2008; Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), 2005).

The significant drivers of change to educational institutional structures, management, facilities, curricula, pedagogy and assessment are relentless. While change is inevitable, place-based education remains the established model for

schooling and as such, the learning spaces being created in response to the 21st century context and beyond (a new school built today is expected to still be in service in seventy years time) will continue to be occupied by accredited teachers and their students. Previous experience has taught us that changing the space without participation of those who occupy those spaces to deliver their professional services can result in long-term failure to optimize the promise of those spaces (Martinho, M. & da Silver, J. F., 2008).

The drivers of change already mentioned have influenced the learning space discourse in tangible ways. Expenditure on new learning spaces across the developed economies is significant and as such, increasing demands for evidence of the beneficial effects of new designs on academic outcomes can be expected. There will be an ongoing interest in how learning spaces impact on learning. A current example is found in Barrett, Zhang, Moffat and Kobbacy (2013) who applied a multi-level analysis to identify the impact of classroom design on primary school student learning in a UK setting.



Figure 1-1 Pre-fabricated classroom Victoria, Australia 1951 and a refurbished classroom rural Queensland, Australia, 2010 (data from study).

1.1.4 Neglect of teacher ‘voice’ in learning space literature

The review of the literature presented in Chapter 3 provides evidence of the lack of concern by researchers across disciplines with understanding how the teachers, who occupy learning spaces as part of their daily workflow, make decisions about those learning spaces. The focus of research has hitherto been dominated by attempts to identify those environmental variables that impact on academic outcomes measured by performance on standardized measures of reading, mathematical competency and similar indicators of academic achievement. Attempts to isolate the impact of specific environmental variables are fraught with difficulty outside laboratory contexts, and laboratory experiments lack ecological validity. This is a dilemma for researchers. Learning in the ‘real’ world is always contextualized and controlling for the many variables concerned is implausible.

A significant variable in any learning context is the behavior of the teacher. Teacher behavior is also contextualized and subject to multiple proximal and distal contextual influences. Understanding how teachers resolve their concerns as they design, manage and maintain learning spaces as part of their daily workflow is crucial to understanding how learning spaces operate in a transactional way as people-in-environment systems. The learning space literature provides scant attention to the voices of the teachers who operate in learning spaces as part of their daily workflow (Woolner, 2010), despite evidence that inclusion of such a voice may improve the uptake of the types of pedagogical behaviours that new designs are intended to support (Higgins, Hall, Wall, Woolner & McCaughey, 2007).

This study relies on the subjective reflections of primary teachers to provide a theoretical account of how they perceive their role in managing learning spaces as part of their daily workflows, and thus represents an attempt to address the ongoing gap in this dimension of the contemporary learning space literature.

1.1.5 Absence of grounded theory

There are many theories used in environmental psychology to account for the influence of the environment on human behavior and vice versa (Bechtel, 2002; Gifford, 1997; Stokols and Altman, 1987; Steg, Berg, & de Groot, 2013). There is a need however, to continue the tradition of substantive theory building using grounded approaches in order to evolve our understanding of particular person-in-environment contexts. Chapter 3 demonstrates the lack of grounded theory to account for the specific question of how primary teachers resolve their concerns as active occupants of learning spaces in a specially socially sanctioned role. Relying on the application of grand psychological theories to substantive fields may limit the creative and scientific endeavor of building theory to account for human experience and action in context. This study generates a substantive theory in context that can then be subjected to verification research, and or comparison with other theories that could also be applied to account for the patterns distilled from the data gathered in the context of this research project.

1.1.6 Personal-professional motivations and interests

School classrooms are special places in the lives of most people in Western developed economies. It would be unusual to find someone who did not have memories of being at school. Quite often people can be found to have animated discussions as they recall or reminisce about their experiences at school, and their memories reach far back into childhood regardless of how old the person is. Many people relate their childhood experiences at school to later outcomes in life. Schools themselves are potent sources of identity as they are places where children learn to socialise not only with other children of the same age but also with children from a variety of age ranges and a diversity of backgrounds, and adults who serve different functions within the school setting. The curriculum of the school is also a major force in shaping the early experiences of children as members of a society. The curriculum, its delivery, the learning spaces in which it is delivered, the relationships of those who share those spaces, and the broader context of school, family, community, and childhood interact in potent ways that have long-lasting implications of a psychological nature for individuals.

My own memories of primary and secondary school are troubling. I was a disengaged learner, lacking a sense of belonging in the school context and finding myself often at odds with teachers and administration. Despite the antagonism I felt as a child towards school, I often visited it out of hours and explored every nook and cranny of it and the surrounding area. The school, bordered by a small creek, afforded many spaces where a reclusive child could spend time away from the demands of family life. It was a time before security cameras, school watch programs and overly anxious parents who needed to know where their children were every minute of the day.

At secondary school I achieved well in those subjects in which I had an interest. Under the guidance of a small number of teachers who could see some potential in me where all I could see was frustration, I managed to achieve to an extent where education demonstrated its door opening potentials. Ironically after a couple of false starts I took up a career in education that has seen me occupy a broad range of roles across many sites. This career has spanned twenty-nine years since my first posting as a primary school teacher to Allora State School on the Darling Downs in Queensland, Australia in 1984. Since that time, I have worked in site based and peripatetic roles as a primary class teacher, small school principal, English as a second language teacher, support teacher learning difficulties, advisory visiting teacher for students with intellectual impairment, guidance officer, school counsellor, family therapist and university lecturer in a faculty of education. I had delivered educational support services to forty-seven school sites across Queensland, prior to taking up an academic position at the University of Southern Queensland in 2004.

For the bulk of my career in education I saw learning as being an inner psychological process. It always seemed obvious to me that a richly endowed environment, positive relationships and competent teaching contributed to student learning, but learning itself was an inner process that did not necessarily rely on any of these variables. In the early 2000s I completed a postgraduate diploma in mental health science, specializing in family therapy. This course of study had a profound influence on my view of the world and ultimately on my view of schooling, learning and teaching. The cybernetic and systems theory ontology and epistemology that formed the foundation of the family therapy studies of the program, led me to a critical reflection of my professional attitude and practice and I began to see my life in terms of patterns of relationships - not just in a social sense but also in my relationship with the environments I inhabited. This evolution of my world-view was supported by a rich diet of reading including the works of Gregory Bateson (Bateson, 2000, 2002), Bradford Keeney (1983), Dorothy and Raphael Becvar (2003), Murray Bowen (1993), Paul Watzlawick (1967), Virginia Satir (1989), Steve de Shazer (1988) and Paul Gibney (2003) among others.

As I reflected on my professional life I saw how as an embodied being, immersed in space and time, I was active in context, not simply reactive to stimuli. As a teacher, I made choices about the environment that had impacts on student experience, behavior and learning. I saw how complex feedback loops operated to reinforce patterns of behavior and relationship. I saw that the impact of the perturbation of systems could drive change and the tendency to homeostasis in the face of change. I began to sit still and allow a growing awareness of being in space and time to emerge in me, and I experienced my relationship with my environments in a fuller and more satisfying way. I began to wonder how these experiences might inform an in-depth study of the experiences of primary school teachers as they go about interacting with their environments in schools on a daily basis.

These developments in my way of being in the world led me to explore more formally how psychology as a discipline dealt with the human in environment system. I was initially drawn to the phenomenological literature, in particular, the works of Merleau-Ponty (1962), Heidegger (1978) and Van Manen (2002, 1996, 1990). I was interested in the concept of 'being-in-the-world' (Dasein) and 'lived experience' and also in the phenomenological endeavor to discover the essence of human experience in context. My interest shifted after approaching Prof. Grace Pretty to discuss my thoughts about entering into the PhD program to further my

interests. Prof. Pretty ultimately agreed to be my primary supervisor for the PhD program at the University of Southern Queensland.

With Professor Pretty's help, I discovered the works of James Gibson (1986) on perception and especially the construct of affordances. Then the work of Roger Barker (1968) on behavior settings came into view. Harry Heft's book *Ecological psychology in context* (Heft, 2001) filled in gaps between the philosophical foundations for Gibson's and Barker's research through exploring William James's (2010) radical empiricism.

The next step was an introduction to environmental psychology and researchers such as: Altman and Low (1992), Altman and Werner (1985), Bechtel and Churchman (2002), Barker (1968), Bell and Fisher (1990), Bonnes and Secchiaroli (1995), Canter and Craik (1981), Gibson (1986), Gifford (1997), Holahan (1982), Ittelson (1974), Proshansky (1976), Rivlin and Wolfe (1985), Reed (1996), Stokols and Altman (1987), Walsh, Craik and Price (2000), Wapner, Demick and Yamamoto (2000), Werner, Brown and Altman (2002), and Wicker (1984). At the same time I found the human geographers, Tuan (1977), Seamon (1979) and Relph (1976, 1981). I began to see the interdisciplinary connections in environmental psychology. My final area for study was a synthesis of my exploration of environmental and ecological psychology, human geography, philosophy, phenomenology, learning theory and a professional history rich in a sense of place, from the classroom to the counselling room, the lecture theatre, the tutorial space, and the incredibly rich discussions that took place in the offices of colleagues and my supervisors.

In this study I make an attempt to transcend disciplinary boundaries and meld my enduring interests in human psychology, learning, teaching and the environment. Two ideas continue to resonate for me throughout the process of this project. 1. The map is not the territory, the name is not the thing named, and 2. The whole is greater than the sum of its parts. Finally, Robert Frost (1962) wrote, "If the day ever comes when they know who they are, they may know better where they are..." (from his poem *Mist & Smoke*, 1962). I have concluded that equally important is the notion that knowing where we are tells us who we are .

1.2 Research Goals

This research project aims to generate a substantive theory of how primary school teachers experience and resolve the concerns that they have as they design, manage and maintain learning spaces as part of their daily workflow. Glaserian grounded theory is intended to theoretically account for what is going on in a particular substantive field of human action. The perspective is meant to reflect the "point of view of the actors involved" (Glaser, 1998, p. 115). Glaser (1998, p. 115) describes the goal for grounded theory research as revolving

around the main concern of the participants whose behavior continually resolves their concern. Their continual resolving is the core variable. It is the prime mover of most of the behavior seen and talked about in the substantive area. It is what is going on! It emerges as the overriding pattern."

I interpret the technical term, 'main concern' in this study to refer to the intentions of participants as they go about their daily work in learning spaces and how they continually engage in patterns of behavior to achieve those intentions. The

conceptualizing and categorizing of teacher behavior and experience from researcher perceived patterns in coded data, leads to an integrating core variable that accounts for variation in the participants behavior. That core variable is portrayed as the “overriding pattern” referred to Glaser (1998, p. 115), and indicates how the participants achieve their intentions in the learning spaces they occupy in their role. This is a theoretical account rather than a descriptive analysis or explanation of cause-effect relationships.

The theory generated from the research process will inform primary school teachers, school leadership teams, educational facilities planners, architects and academics about the need to consider the teacher experience and perspective of action in context in learning spaces. Such consideration will help to ensure that the lived experience of primary school teachers will inform the broader design processes for new and refurbished learning spaces. Ultimately this relates to enhancing the learning and teaching experience, the experience of being in a learning space, the facilitation of a sense of wellbeing, belonging and attachment to learning spaces. These are considered to be protective factors in terms of student and teacher wellbeing and thus directly related to enhancing the outcomes of schooling in a holistic fashion that is consistent with the Melbourne Declaration on Educational Goals for Young Australians (Australian Education Ministers, 2008).

1.3 Research questions

As this is a grounded theory study following in broad terms the classic or Glaserian (Glaser, 1992) grounded theory methodology, the research questions delimit the study to the following:

1. What is the main concern of primary school teachers as they design, manage and maintain learning spaces as part of their daily workflow?
2. How do primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
3. What theoretically accounts for the ways that primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
4. What practical implications for primary school teachers and education facilities planners, derive from understanding how primary school teachers resolve their main concern associated with their engagement with learning spaces as part of their daily workflow?

1.4 Research design

This inquiry is a hypothesis generating study (Auerbach & Silverstein, 2003) that explores how a group of primary school teachers design, manage and maintain learning spaces, as they go about the business of their daily work. The study uses qualitative data in the form of photographs taken by the participants and in-depth interviews using photo elicitation methods, to generate, through grounded theory analysis methods, a substantive theory that accounts for how the participants resolve their main concern in relation to the primary research question.

In broad terms this study is an example of qualitative research. For the purposes of this study the definition of qualitative research offered by Auerbach and Silverstein (2003) is adopted. “Qualitative research is research that involves analysing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon” (p. 3). The yield of this process is a theory or set of hypotheses. Auerbach and Silverstein (2003) define a theory as “...a description of a pattern that you find in the data” (p. 32).

More specifically, the generation of a grounded theory is the primary goal of the study and so, grounded theory methods have been applied to towards this aim. I have applied a synthesis of what have been considered alternative perspectives on what grounded theory is as a research methodology. I have adopted the Glaserian (Glaser, 1992) perspective in terms of delimiting the study through the research questions addressed and the methods for gathering and analysing data. I have adopted a constructivist perspective in terms of the role of the researcher as perceiver of patterns in the data, generator of names for these patterns and constructor of a theoretical concept to integrate these patterns to account theoretically for primary school teacher behavior in context.

Figure 1-2 represents a synthesis of research design models provided by Maxwell (2013) for qualitative researchers and Charmaz (2006) for grounded theory researchers. Specific terms such as theoretical sensitivity, constant comparison and memoing are elaborated on in Chapter 4.

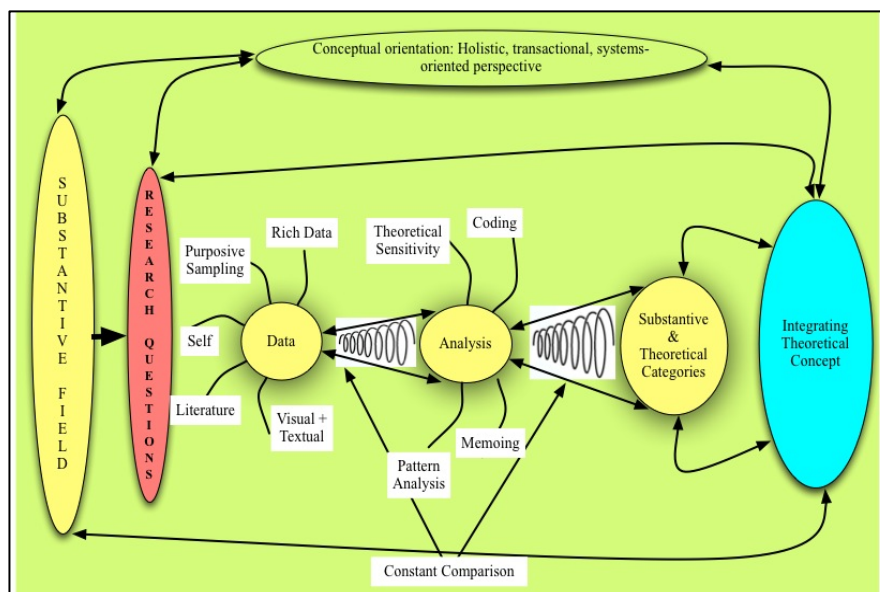


Figure 1-2 Research design

1.5 Overview of dissertation structure

This dissertation is structured differently from the traditional five-chapter psychology dissertation owing to the methodology applied. As a grounded theory study, using qualitative data the chapter order and number of chapters have been adapted to provide the reader with coherence and to achieve fidelity to the qualitative paradigm that underpins it.

Chapter 1 has outlined the background, goals, research questions and research design. A brief review of the contexts that established the need for the study was provided. Chapter 2 provides an overview of the conceptual domains that contributed to the overall conceptual attitude of the researcher. Four conceptual domains provided the foundation of the final researcher perspective. The interaction among these domains indicated the additive effect they had to help the researcher achieve coherence in applying the methodology and context relevance in constructing the thesis. This is consistent with the qualitative research perspective that absolute researcher objectivity is not possible, and that researcher subjectivity should be transparent and considered not as a threat to trustworthiness, but as a valuable contributor to the insights provided by the research. The grounded theory researcher is the primary research instrument and cannot be underestimated. “The self is not some kind of virus which contaminates the research. On the contrary, the self is the research tool, and thus intimately connected to the methods we deploy” (Cousin,, 2010).

Chapter 3 surveys the multi-disciplinary literature that is pertinent to the study and draws the conclusion that an absence of teacher voice in learning space research, and an over-reliance on molecular studies to determine the impact of external environmental variables on academic performance, has crowded out the important issue of understanding how teachers act in context in learning spaces.

Chapter 4 outlines the methodology employed in the study. A justification of the use of a grounded theory approach is provided before detailing matters of methodological practicalities. Chapter 5 presents the first of two sets of findings with a description of how these have been arrived at. These form a context of complexity in which further findings are embedded. This integration of analysis and findings is consistent with grounded theory studies. Chapter 6 presents the second set of findings in the form of an articulation of the main concern of teachers as they design, manage and maintain learning spaces as part of their daily workflow. Four substantive categories that indicate how teachers resolve this main concern are proposed.

Chapter 7 describes the theoretical concept that integrates the findings of chapter six and contributes a way of interpreting primary school teacher behavior from a holistic, transactional and systems oriented perspective.

Chapter 8 provides practical recommendations on how this can enhance learning spaces to provide a protective space and experience for all who attend them. Chapter 8 also addresses the limitations of the study and suggestions for further research.

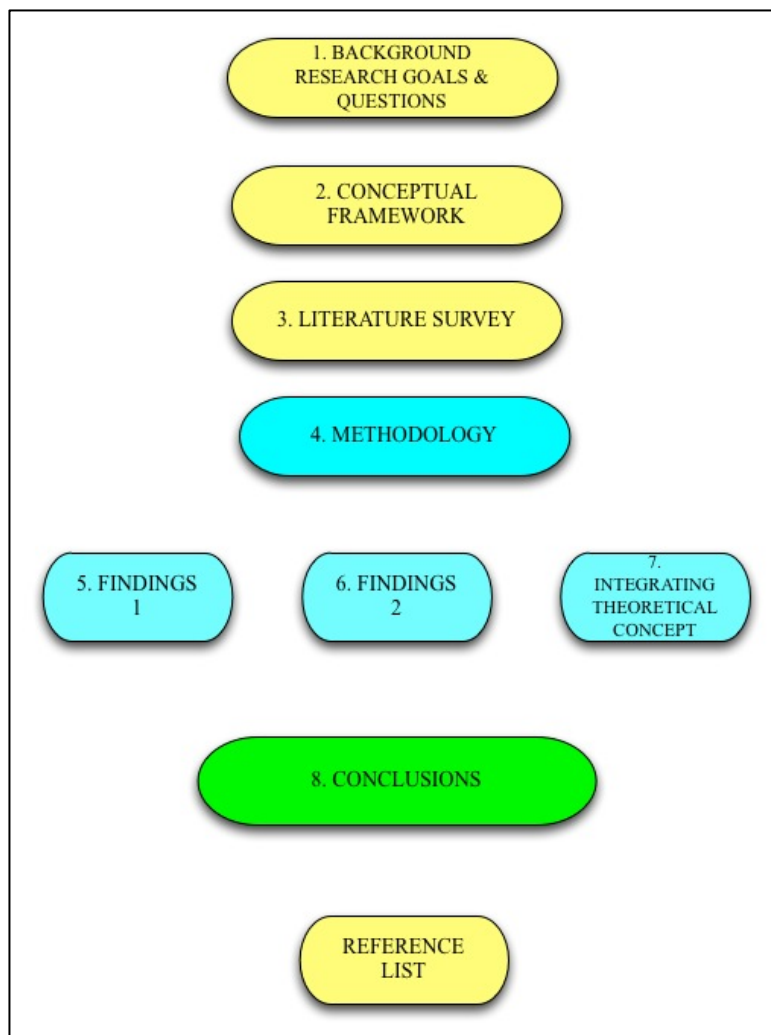


Figure 1-3 Dissertation structure

1.6 Summary

This study explored the subjective experiences and reflections of participants engaging in sustained action in a substantive field. A theory of action was generated, that describes the complexity of the participant's experience and the person-in-environment milieu that is negotiated in order to achieve the participant's goals in that milieu. The result or yield of this inquiry is a grounded theory.

The substantive field for this study is the phenomenon of primary school teachers going about managing learning (classroom and other) spaces in the day to day flow of their working lives. This study endeavours to arrive at a better understanding of how primary school teachers conduct themselves, the main concerns they have and the ways in which they go about resolving these concerns as they manage, in the context of everyday work, learning space, in the service of student learning.

The focus of this study is on listening to teachers in context as they reflect on how they design, operate in and maintain the learning spaces they have access to on a daily basis. Listening to their voices will make a contribution to the significant

discussions and resulting actions that are being engaged in about the very spaces these teachers will be provided with in the future.

The discipline of environmental psychology forms the conceptual canvas upon which this study is painted. The particular perspective that informs the researcher's approach to theorizing is the holistic, developmental, systems-oriented approach (Wapner & Demick, 2002) and the transactionally oriented research approach (Werner, Brown & Altman, 2002). Both of these approaches acknowledge the importance of a context, the holistic nature of human behaviour and the endeavour to explain it in terms of person-in-environment transactions from a relational perspective.

This conceptual backdrop does not imply a hypothetico-deductive approach has been used. The study uses grounded theory methods and induction as the primary analytical tools to arrive at a theoretical understanding of the significant patterns of action reported by participants as they engage on a daily basis with the environment known as 'learning space'.

Positional and textual reflexivity are considered important aspects of the research process and the tensions that are inherent in the application of these are somewhat relieved through an explicit articulation of the principles of symbolic interactionism as a cohesive, integrating perspective, throughout the study.

Chapter 2: Conceptual Framework

2.1 Introduction

This chapter introduces the conceptual framework that guided the research endeavour. I have adopted the view of Maxwell (1996) who with Baxter, Hughes and Tight (1996) describes the conceptual framework in terms of its function. The conceptual framework is a tool used by the researcher to delimit the study, suggest relevant methodologies to apply, point to relevant literature to investigate, and make explicit the beliefs and conceptual foundations that the researcher needs to be aware of to achieve the demands of reflexivity. A further function of the conceptual framework is to assist the reader of the research report to access the content of the report through its logical and clearly articulated purpose, method and results .

The conceptual framework is often presented in both graphic and textual forms in order to convey the research territory for the researcher and the reader (Maxwell, J.A., 1996). This chapter presents a graphic representation of the theoretical dimensions that informed the study along with a textual elaboration of each of the conceptual domains represented. A graphic to represent the conceptual framework is presented and this is followed by descriptions of the philosophical, disciplinary, methodological and researcher conceptual domains that when integrated provide the approach that best addressed the research question, and satisfied the need for coherence in the way the question was addressed methodologically, analytically and theoretically.

2.2 Conceptual Framework

Studying the main concerns of people in context as they undertake the multiple roles they occupy, as part of their daily working lives is a complex process. Any study of people in action presents a number of challenges for the researcher, and the ways that these are handled are informed by the conceptual framework that the researcher uses intentionally and unintentionally to strive for relevance, coherence and delimiting of the territory under investigation.

Research involves conceptualisation from empirical information. Conceptualisation is guided by the researcher's world-views, understanding of the research methodologies that might be applied to the investigation and competency in the research process. Conceptualisation also pertains to the intellectual orientation of the researcher. It transcends description in favour of analysis and the active construction of ideas that lead to new ways of looking at the substantive field that is the territory of the investigation. Conceptualisation leads to the building of theory that is aimed at accounting for what the researcher argues is going on in the substantive field pertaining to the study.

Figures 2.1a and 2.1b provide a visual representation of the conceptual domains that informed this study. I considered it important to include the philosophical, disciplinary and methodological domains in the development of the conceptual framework, as all three proved invaluable in contributing ideas about the nature of the research problem, the reasons for investigating it, what had previously been done in the relevant discipline area, and a relevant and credible way of

conducting the research. I have also included myself as researcher in the conceptual framework as my values, beliefs, experiences and ways of working are all relevant to the way the research was conducted.

This study is hypothesis generating rather than hypothesis testing (Auerbach & Silverstein, 2003). It generates a grounded theory through the collection and analysis of rich qualitative data using grounded theory methods. The primary source of data is the subjective reflections of sixteen primary school teachers who participated in a photo-elicited interview process. The participants were recruited for the study across five sites.

The conceptual framework that I generated for the study is consistent with the Interactive Model developed by Maxwell (2013) for qualitative researchers, but in a modified form to be consistent with the application of grounded theory methods. The Interactive Model proposes that the central question for the conceptual framework is “What do you think is going on?” (Maxwell, 2013, p. 40). In order to unpack this question I have considered what I think are the conceptual domains that provide me with the necessary foundations of information and conceptual frameworks to address the primary research question: What are the main concerns of primary school teachers as they design, manage and maintain learning spaces as part of their daily workflow?

This study was inductive in nature. Concepts were generated from coded data and integrated through the application of the constant comparative analytical process (Charmaz, 2006; Glaser & Strauss, 1967; Glaser, 1992, 2001, 2011). Being inductive and following the basic principles of grounded theory methods, the conceptual framework represents a set of conceptual domains that shaped the research perspective. It is therefore not a statement of what I thought was going on (Joseph Alex Maxwell, 2013) prior to engaging in the research process. It is instead, a framework of contextual influences that contributed to the research design. The rest of Chapter 2 describes the conceptual domains that helped me to understand what I think shaped how the study addressed the research questions.

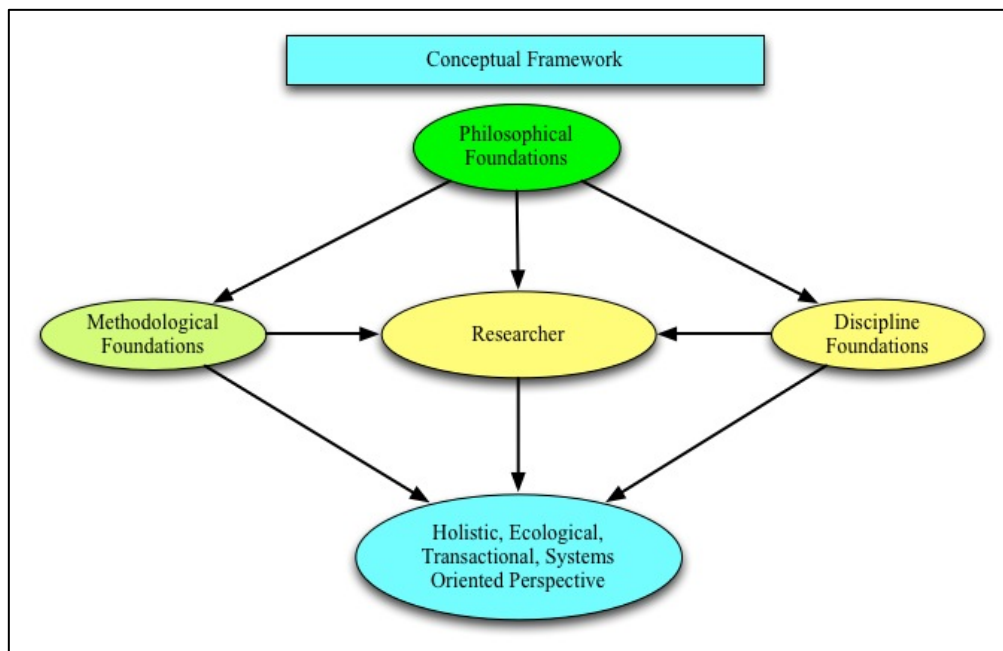


Figure 2-2.2-1a Dimensions that inform the conceptual framework

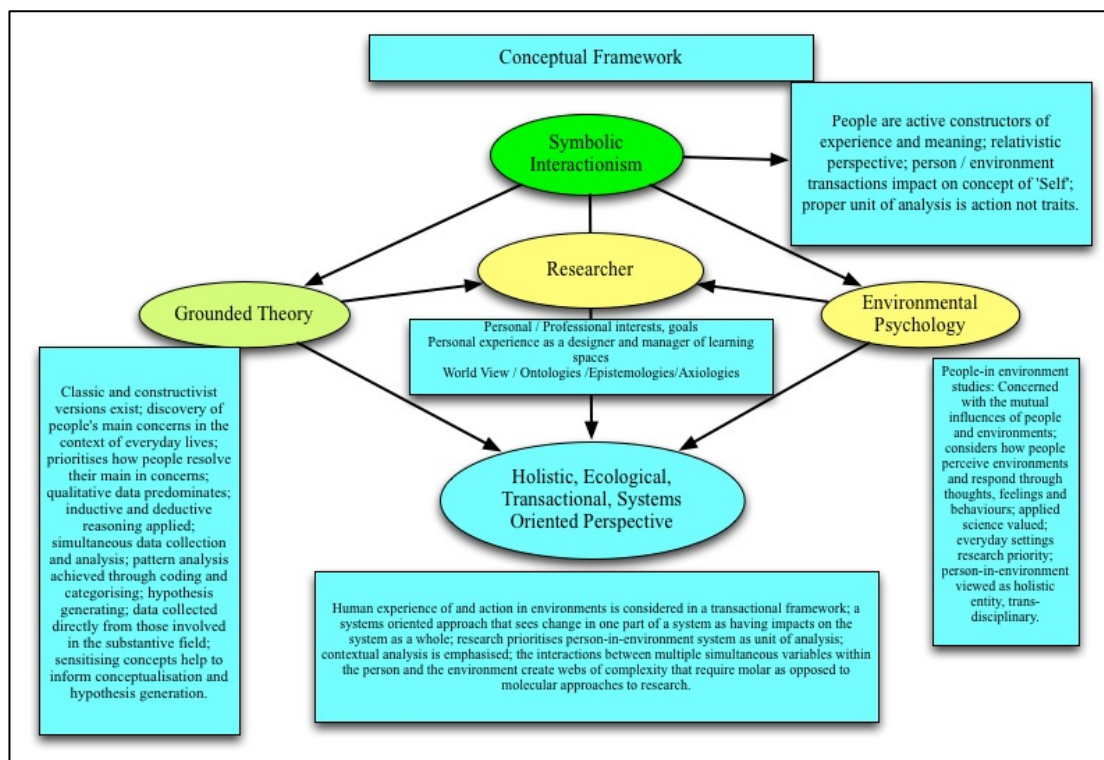


Figure 2-1b Dimensions that inform the conceptual framework elaborated

2.2.1 Philosophical Foundations

Research, is underpinned by perspectives on the nature of things as they are (ontology), what can be known and how knowledge is constructed (epistemology) and what is valued (axiology). A researcher's perspectives on these aspects of the research process guides and influences the approach taken, the types of research yields and what is considered valuable in terms of contribution to the field under investigation. The three domains of ontology, epistemology and axiology comprise the foundations of a research paradigm (Kuhn, 1970 as cited in Maxwell, 2013). Research paradigms relate to communities of researchers and their audiences and as such are social constructions that account for the phenomenon being researched in a particular way.

2.2.1.1 Ontology

Research reflects a perspective of the nature of the human condition and the environments in which humans exist. This perspective may be explicit to various degrees. A researcher's perspective is reflected in the research design, the research questions themselves, the methods used to interrogate the field and the nature of the conclusions. Ontological attitudes are not explicitly communicated in much of the research literature. They remain under the surface but have profound implications for the interpretation of research products (Frost, 2011).

I have adopted a critical realist approach (Joseph Alex Maxwell, 2013) to the ontological assumptions that underpin this study of primary teachers acting in context. This approach assumes that the universe in all its manifestations exists regardless of my being part of it. There are patterns that underpin nature and make it coherent such that it can hold together and not disintegrate. These patterns are recursive such that cause–effect relationships are circular rather than linear for the most part and point to systems of interactions between elements to create a backdrop or canvas upon which humans and other organisms can interpret the environment in order to thrive. My ontology assumes that the universe and all its assets remain real, regardless of my participation in it. This extends to the patterns of interactions that exist in social contexts. Humans behave in goal-oriented ways at a molar level as well as a molecular level. Patterns of social interactions exist regardless of my participation in them. Furthermore, if they exist they are open for investigation and description.

As embodied beings, immersed in time and space, we experience the environment in the context of time. The idea of a point in time, or a time-frame is crucial in the research act as what ever is constructed as reality is subject to the caveat, ‘at this point in time’. Time is infinitely unfolding and everything in this context is in a state of change, some things building up and others breaking down. The environment includes all that occupies a space in it, including time, and can only be experienced in the context of time. Without a sense of time, the human experience would be chaotic. There would only be the ‘now’ and what is ‘now’ is already past. With only an experience of ‘now’, the person has no past or future in subjective experiential terms. One could not learn and could not develop a personality built on a sense of self that endures over time.

Finally, taking from the work of Barker (1968) I accept that the environments in which we live are in part behaviourally coercive. Environments are physical, social, objective and subjective at the same time. As such, environments both shape and are shaped by human occupants in a recursive fashion. The physical environment speaks to us in different ways at the same time. It coerces us to behave in certain ways through the affordances it provides us (Barker, 1968; Gibson, 1986; Schoggen, 1989). Institutions such as prisons provide a good example of how the physical environment is designed to coerce certain behaviours. But we need only to go to the local supermarket, school or hospital to see the same principles in action. Driving a car on any urban street should convince one of the roles of the physical environment in shaping human behaviour.

2.2.1.2 Epistemology

Researchers also have particular views on what humans can know and the processes involved in this knowing. Epistemology as a branch of philosophy concerns itself with issues of the nature of knowledge and how humans can know things about their universe. Epistemology "is concerned with the origins, nature, methods and limits of human knowledge" (Reber & Reber, 2001). Epistemological considerations have always been related in some way to human research endeavours. I have drawn from symbolic-interactionism to inform my epistemological attitude in this study.

The symbolic interactionist tradition sees humans as active participants in their environments rather than responders to it. Humans actively shape the world they occupy. They are active in defining the world according to the dynamic perspectives

they formulate in context. Contexts include social, physical, temporal, cognitive, affective and behavioural dimensions.

Charon (2010) alludes to the construction of meaning and understanding of the contexts in which we find ourselves, and that these interpretations guide our behaviour and subjective experience of reality. This perspective is itself informed by the philosophy of pragmatism that emphasises four epistemologically related perspectives:

1. Humans do not merely respond to the environments they inhabit, they interpret it
2. Humans believe those things that are useful in context; knowledge is constructed and has to be believed according to its successful application in the external world
3. Humans use attention selectively according to their interpretation of the usefulness of external dimensions of the environment
4. As a result of the previous points, pragmatism advocates a focus on human action in research to account for human 'being'.

(adapted from Charon, 2009, pp. 30-31)

The points made by Charon (2010) are consistent with a relativist / constructivist epistemology that assumes that truth is defined as being the truth constructed by the perceiver in context. Truth is therefore situated and can best be thought of as situated and relative to the circumstances. Maxwell (2013) articulates this well "...every theory, model, or conclusion...is necessarily a simplified and incomplete attempt to grasp something about a complex reality" (p. 43). In relation to the conceptual framework for this study, there is coherence among the philosophical positions of pragmatism, symbolic interactionism, critical realism and the methodology that was ultimately applied, grounded theory.

A relativist epistemological position seems at odds with realist ontology and the previously mentioned coercive aspects of environment on human behavior. Such dichotomies do not in my view reflect the complexity of the natural order of things. I do not see the acceptance of the realist ontology as contradicting a relativist view that accounts for the subjective construction of an individual's reality as it emerges from moment to moment. Humans are structurally determined to perceive (Maturana & Varela, 1992). Perception is not the same as 'seeing'. The eye is not a camera and the ears are not recording devices. In this way, all subjective experience is a construction. Yet, what exists to be sensed, perceived and made meaning of does so, regardless of any individual's participation in that reality.

2.2.1.3 Axiology

The notion of value free research has been critiqued for decades now. Lincoln and Guba (1985) provided a sound rebuff to the then commonly held view that scientific research for instance could ever be value free, objective and free of bias. Their ideas have been built on through successive decades but the study of the role of values (value theory) in research is still in its infancy (Hiles, D.R., 2008).

One can identify particular personal values that can impact on the research process and its yield. Research values are another dimension for consideration in the field of axiology and these are closely associated with ethics. I see these two dimensions of axiology as being inseparable. Who I am as a person and who I am as a researcher are complementary.

Regardless of one's espoused values in either domain, personal or research, there are times when aligning one's behaviours with values can be challenged. Like threats to trustworthiness, there are threats to the alignment of behaviours and values. Cultivating mindfulness of values in action is one way to protect against serious misalignments in the axiological arena. As a school counselor, I was faced with many challenges to my values and I found it important to adopt an ethical framework to help me resolve the tensions that regularly emerged between institutional approaches to student wellbeing and what I saw as being incongruences between student welfare and the application of institutional codes. My steadfast value of inclusion and diversity was one area where institutional rhetoric and behavior were often a source of discomfort for me as I carried out my professional duties.

The ethical framework that I found best complemented my personal values is known as the bio-ethical approach (Johnstone, 2009). This framework refers to four dimensions: Non-maleficence, Beneficence, Justice and Autonomy. To these four I add the concept of fidelity. Using the framework as a heuristic in professional decision-making has proved most helpful in situations where client welfare transcends professional or institutional codes. I consider this a useful framework in consideration of research ethics as well. I unpack this further in Chapter 4.

2.2.1.4 A personal set of philosophical assumptions

I subscribe to some fundamental ideas that have guided my research decisions and behaviours. These are summarised as follows:

I agree with a realist perspective in that I see the universe we inhabit as being apparent, regardless of my participation in it. I agree with Miles and Huberman (1994) that, "social phenomena exist not only in the mind but also in the objective world- and that some lawful and reasonably stable relationships are to be found among them" (p. 4). I believe that this world, including the domain of human behaviour, culture and relationships, is knowable through the discernment of the patterns and regularities that are part of the fabric of its being.

It seems reasonable to me that as organisms, we are structurally determined to behave in certain ways and that we are not guided by metaphysical forces (Maturana & Varela, 1992). This does not preclude the influence of forces in the environment that are out of our everyday awareness and may, if perceived, be beyond personal explanation.

We do not inhabit our world alone. Humans are social beings and we have developed a sophisticated symbol system of language to interpret the world we inhabit and to communicate and be in relationships with those around us. We make meaning of our world by being able to map language onto experience and to discern patterns that assist us in creating a sense of stability of identity in a context of other identities. Hence, the 'reality' we experience is a construction or a map of the territory we live in. The map is not the territory (Bateson, 2002). Nor is it a static representation of our environment. It is in a continual process of reconstruction as new information is received and given meaning, and integrated into the cognitive, affective and behavioural systems that make up the individual psyche.

So, despite my assertion that there exists a world of physical and social phenomena separate from me and not dependent on my existence, the world experienced by individuals is subjective and constructed. This assumes that people are active shapers of environments rather than passive responders to them. They are

goal oriented and adjust to the circumstances in which they are embedded as they go about achieving the goals that are salient for them at any particular time.

Our social nature means that we do not act as individuals alone, and it is apparent to me that when looking at human behavior, at the 'molar' level, there are regularities and patterns that are remarkably reliable in predicting variances in individual behaviour to a high degree (Barker, 1968; Schoggen, 1989). En masse, humans behave in predictable ways as they go about their everyday lives in behaviour settings. These predictable regularities are known as 'standing patterns of behaviour' (Barker, 1968; Schoggen, 1989).

I see people as occupying space and time in complex environments that can be reduced conceptually, into different dimensions and their interactions, in order to develop an understanding of how these interactions operate, to sustain those contexts, and the individuals, who occupy them. This reduction is not 'reality'. It is a convenience for the researcher who is incapable of perceiving the holistic reality of lived experience in context, and who is reliant on the subjective reflections of others in this instance to theorise about reality. No researchers have access to all the information at any given time that might influence their interpretations of the phenomena under investigation, just as no research participant has access to all the information that might explain themselves to themselves, let alone to someone else. To see all the coexisting relational patterns that are at play in any instant of a person's life would be to take a God's-eye view that by definition is beyond the reach of the human researcher. We are capable of perceiving only partial arcs in our research endeavours (Becvar & Becvar, 2003).

These ideas that I hold about the nature of the world, social life and individual psychology have a number of implications for how I approach research. I am pragmatically oriented and see the research act as being important for informing action. The questions I am interested in are exploratory in nature rather than hypothesis testing. I am interested in exploring phenomena in context and through direct contact with those who are directly engaged in the activities I am curious about. I believe that substantive theory can be generated through research processes that collect data by getting close to those who are participating in the research, and that this theory can be of some pragmatic usefulness to those who contributed to the research, as well as to the broader professional domain in which the research takes place. This is essentially an empiricist attitude and I am primarily interested in empirical studies where any theory generated is grounded to a large extent in the actual data.

There are values inherent in my perspective that are represented by a concern for the application of ethical principles in the conduct of research. Additionally, a concern is evident for the ways that my research can contribute positively to the enhancement of learning spaces as a welfare issue, and as a matter of social justice for all children and those who serve them in teaching roles. I value the perspectives of those who are actively engaged in the substantive field of my investigation.

I am concerned not to make judgments in my research about what is right or wrong or more effective or less effective about the behaviours of participants. I am concerned to conceptualise from the data, a set of hypotheses that can then be subjected to verificational study to test their efficacy in accounting for how primary teachers resolve concerns as they design, manage and maintain learning spaces as part of their daily workflow. To this end I value the collection of rich data from those

directly participating in a substantive field, to further our understanding of what their main concerns are in that field and how they go about resolving these.

I value the opportunity to make recommendations about the types of action that can enhance the lives of primary teachers and the students they serve, through ascertaining the practical implications of the theory I generate as a result of the analytical process. I also value the opportunity to learn about the research process itself through my engagement in it, as this will enable me to make better choices in future research endeavours.

2.2.2 Discipline Foundations: Environmental Psychology

A detailed literature survey of the learning space context follows in Chapter 3 and provides a review of literature from a number of disciplines to reflect the trans-disciplinary nature of the research into learning spaces. This current subsection addresses the conceptual domain of environmental psychology as the primary discipline contributing to the overall conceptual field being investigated.

2.2.2.1 Basic Assumptions in Environmental Psychology

Environmental psychologists are concerned with the transactional relationships between people and environments and how those relationships impact on human behaviour, experience, and wellbeing on the one hand, and the environment on the other. Since its beginnings, Environmental Psychology has investigated the impacts of external environmental variables on human cognition, affect and behaviour. Early in the evolution of EP, a transactional perspective of human-environment relationships emerged (M. Bonnes & Secchiaroli, 1995; Seymour Wapner, 2000; Wicker, 1984). Rather than seeing the impact of environments on people embedded in those environments as being a one-way, deterministic, linear cause-effect relationship, a transactional, ecological approach evolved that considers the mutual influencing of a human-environment system (M. Bonnes & Secchiaroli, 1995; Gifford et al., 2011; Gifford, 1987).

The early emphasis in environmental psychology was on researching the spatial-physical properties of environments in which people are embedded, but by the late 1980s this perspective had largely given way in theoretical terms to the transactional-contextual approach that is more systems oriented and holistic in its view of person-in-environment transactions. The transactional-contextual approach is typified by the following characteristics:

1. The person-in-environment provides the unit of analysis.
 2. Both person and environment dynamically define and transform each other over time as aspects of a unitary whole.
 3. Stability and change coexist continuously.
 4. The direction of change is emergent, not pre-established.
 5. The changes that occur at one level affect the other levels, creating new person environment configurations.
- (Bonnes & Bonaiuto, 2002)

Gifford, Steg and Resner (2011) describe environmental psychology in applied terms, pointing to the prevalence of researchers engaging in the development of

policy and concern with local environmental issues. The primary goals of environmental psychology asserted by these authors are as follows:

1. Improve the built environment and stewardship of natural resources,
 2. Study everyday settings (or close simulations of them),
 3. Consider person and setting as a holistic entity,
 4. Recognize that individuals actively cope with and shape environments; they do not passively respond to environmental forces,
 5. Work in conjunction with other disciplines.
- (Gifford et al., 2011)

2.2.2.2 *Environmental Psychology's Interest in Educational Contexts*

Environmental psychologists have been active in researching school environments from almost the beginning of its emergence as a separate discipline within psychology (Barker & Gump, 1964; Barker, 1968; Gump, 1978; King & Marans, 1979; Rivlin & Wolfe, 1985; Rivlin & Weinstein, 1984; Weinstein, 1979, 1982). Weinstein (1979) conducted a much often cited review of the research that covered over a decade of research into the physical environment of the school up to that time. Lackney (1994) reviewed the research literature from Environmental Psychology and concluded that it had primarily focused on the classroom context and the "Personal/Physical Dimension Interactions" (p. 31). The main topics researched were: seating position, classroom size, classroom furnishing arrangement, spatial density crowding and stress, privacy, noise and acoustics, climate and thermal comfort, windowless classrooms, vandalism, and open classrooms.

The tradition of researching the impacts of the physical environment on teaching and learning continues to current times, with studies of daylighting, noise annoyance, air quality, temperature control, colour and other tangible physical aspects of the environment. There has been however, an increasing awareness of the need to consider mediating factors in context through an ecological view of school and classroom environments, as the fruitfulness of research of a 'molecular' nature that seeks to isolate certain independent variables of environment and their impact on behavior, has been unequivocal despite decades of endeavour. Currently, attempts are being made to approach the issue of the measurable impact of environmental variables of student academic achievement from a holistic perspective that accounts for the multi-dimensional and interactive nature of the person-in-environment context (Barrett et al., 2013). These efforts address in part, the concern raised by Gifford (2009) about there being a lack of a robust theory of people-in-environment interaction that is easily applied in empirical studies.

2.2.3 Methodological Foundations: Grounded Theory

2.2.3.1 *Grounded Theory Goodness of Fit*

The primary concern in making research methodology decisions is the likelihood that a particular methodology will yield the results necessary to answer the research questions. A preliminary literature review at the confirmation of candidature proposal stage of this study indicated a lack of teacher voice when it came to understanding learning spaces from an Environmental Psychology perspective (Woolner, 2010). This lack of teacher voice was reflected in a lack of formal theory to account for how primary teachers designed, managed and maintained learning

spaces as part of their daily workflow. The absence of theory in this substantive field made the selection of grounded theory methodology a rational choice.

The research questions are reflected in the methodology applied in this study. A classical grounded theory approach (Glaser & Strauss, 1967) was adopted and guided the research process. This approach aims to identify the main concerns of people in context as they go about their lives, and to determine how they resolve whatever main concerns they have in relation to particular behavioural contexts. In this case, the context is the primary school teacher who makes daily decisions about how learning spaces function to facilitate teaching and learning.

The term, main concern does not specifically mean worry or stressor or anxiety in the context of this study. It is a more neutral term that refers to what individuals need to do in order to address the demands of the context they find themselves in. For an individual or group, resolving a main concern in grounded theory research practice can refer to the generalized experience of an environment and a particular problem area that people resolve through a basic social or psychosocial process. For instance Judith Holton's (2006) thesis on rehumanising knowledge work through fluctuating support networks demonstrates how knowledge workers experience dehumanising of their work and how they resolve their experience of that through participation in fluctuating support groups. By contrast, this study, demonstrates how primary teachers experience and behave in the context of their work in learning spaces, and the ways they address (resolve) their shared intentions to create spaces that address the holistic needs of all occupants of those spaces.

2.2.3.2 Qualitative Dimensions

In this study, qualitative data were gathered directly from those who are embedded in the context under investigation. This study is an example of qualitative research. For the purposes of this study the definition of qualitative research offered by Auerbach and Silverstein (2003) was adopted. "Qualitative research is research that involves analysing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon." (p. 3) The yield of this process is a theory or set of hypotheses. Auerbach and Silverstein (2003) define a theory as "...a description of a pattern that you find in the data" (p. 32).

The definition of qualitative research just offered, complements a grounded theory approach that identifies patterns in data collected and analysed throughout the study, to establish a substantive theory to account for how a group of people resolve concerns they have in the context of particular activities that form part of their daily lives. The basic assumptions of qualitative research and grounded theory are consistent with the philosophical, discipline and personal perspectives that I have outlined so far in this chapter.

2.2.3.3 Summary

In summary, the assumptions underpinning the methodological approach taken in this study are as follows:

- researching human behavior in context is appropriate given the multifactorial, transactional and ecological influences on any behavior, including subjective experience that occurs in that context
- purposeful sampling is best suited to building substantive theory
- the research question is process based rather than descriptive

- data collection and analysis occur simultaneously
- data includes the subjective reflections of participants, the researcher's theoretical sensitivity and contextual information
- the research is oriented to searching for patterns in the data that are then named as codes, concepts and categories.
- constant comparison is the basic analytical approach used to generate theoretical categories that account for participant subjective reflections
- a main concern of participants in relation to the substantive field is hypothesized
- theoretical categories of a process nature are generated to account for how participants resolve their main concern
- a core category is generated to integrate the theoretical categories grounded in the data
- the core category is theoretical and can be subjected to verificational study

2.2.4 Researcher Foundations: Reflexivity

Regardless of the choices that we make in undertaking qualitative research, whatever particular methodology is adopted, the researcher is the primary instrument for deciding on the research problem, collecting data, analysing data, and generating codes, concepts and categories and ultimately a substantive theory. Unless we are aware of our contributions to the research process, our role in constructing the yields of the process, and our commitment to ethical research behaviour, serious threats to the trustworthiness of the theory we construct will be apparent. Reflexivity is one way that we can address threats to trustworthiness.

Qualitative researchers are urged to be mindful of, and to make explicit to their audiences, their personal and analytical biases, positions, and evolving understanding of the research process, the study at hand, and the ethical implications involved (Lyons & Coyle, 2007, Mruck & Mey 2010; Auerbach & Silverstein, 2003; Guba & Lincoln, 2005; Gilgun, 2010; Lichtman, 2011; Frosh & Young, 2008). The reflective process is crucial in ensuring that researchers are continually striving for consciousness of how their personal and professional proclivities may be influencing the research process.

It is sufficient to mention in this subsection that my professional career has spanned a number of positions in the education field including, primary school teacher, small school principal, advisory teacher for students with intellectual impairment, school guidance counselor and tertiary education lecturer in education. I am therefore not naïve about the field and have considerable experience in issues of managing the spatial dimensions of learning spaces across a broad range of contexts. These include primary school classrooms, multiage group contexts, whole of primary school contexts, an alternative school context, secondary school contexts and tertiary education contexts. Despite this experiential background, much of my concern with learning spaces, prior to this investigation could be best described as, 'taken for granted' or 'pre-reflective'. My daily interaction with learning spaces demanded pragmatic concerns that I can see reflected in the experiences of the participants in this study. Like them I didn't have a framework for analyzing my experience, or

even consider how crucial my behavior was, to both my students and my own wellbeing and productivity in the spaces I was active in as a pedagogue.

This study has helped me to reflect with purpose on my own experiences of time and space in professional and private contexts and even as a citizen who occupies public space. It has therefore added substantially to my experience of being in time and space on a daily basis. In this way my lived experience has been enhanced and enriched. I am hoping that my research efforts here may help others in a similar way.

2.2.4.1 Threats to trustworthiness

Trustworthiness like its quantitative sibling, validity, is the extent to which an account of the phenomenon under investigation can be considered an honest, reasonable and acceptable account, given the contextual grounding of the study, the application of ethical principles, and the extent to which there is fidelity to a methodology that is accepted by the community of interested readers. Threats to trustworthiness are matters for serious concern by researchers of all persuasions. These are considered in more detail in Chapter 4. Maxwell (2013, p. 121) proposes the central question for trustworthiness as, “How might you be wrong?”

There are two threats to trustworthiness that I see as attracting particular attention in this study. Firstly, researcher bias- in particular the tendency to construct patterns in the data that conform to preconceived, though not necessarily conscious ways of interpreting my own experience, is a concern. Secondly, reactivity is always a possibility in qualitative research where direct interviewing of participants is necessary.

Bias and reactivity have been identified in the qualitative research literature for some time and have been acknowledged as being impossible to eliminate or account for totally (Maxwell, 2013) . This being the case, taking whatever measures are appropriate to minimize these potential threats to trustworthiness is helpful. Acknowledging the possible impacts that these threats may have on the research yield, and how they operate in the research context is also protective. These matters are elaborated in Chapter 4.

2.2.5 Holistic, Ecological, Transactional, Systems Oriented Perspective

The four conceptual domains discussed so far contribute in an interactive way as contexts to the conceptual perspective through which I have approached this study of how primary school teachers design, manage and maintain the learning spaces they occupy as part of their daily workflow. The theoretical perspective through which I have approached the study at the broadest of levels is a synthesis of the four domains discussed and is best described as a holistic, ecological, transactional, systems oriented perspective. This perspective draws from all four domains above, however, it is significantly coloured by the work of those environmental psychologists who have endeavoured to build theory and conduct research applying the principles of holism, ecological thinking, transactionalism and systems theory (Altman, 1992; Bechtel & Churchman, 2002; Clitheroe, Stokols, & Zmuidzinas, 1998; Stokols & Altman, 1987; Wapner et al., 2000; Wapner, 1981; Werner & Altman, 2000; Winkel, Saegert, & Evans, 2009).

2.2.5.1 Essential features of the perspective

The holistic perspective assumes that the whole is greater than the sum of its parts and that phenomena and events cannot be reduced meaningfully to a set of parts that exist independently of one another (Werner et al., 2002). Holism is a feature of ecological, transactional and systems oriented perspectives. It asserts that the person-in-environment is the basic unit of analysis in environmental psychology and that changes in one aspect of any transactional context associated with the phenomena under investigation, will generate changes in other parts of the systems of transactions that are inherent in the phenomenon. This way of thinking about research questions tends towards the search for patterns that are apparent across contexts.

Contexts are a feature of ecological perspectives and indicate the mutual shaping and influence of distal and proximal variables in any given substantive field. Contexts inform action and need to be explored in order to account for what is going on in any given field.

Contexts can be more or less abstract in their conceptualization. Developmental, psychological, physical and socio-cultural contexts are considered important interacting and mutually shaping aspects of person-in-environment studies (S. Wapner et al., 2000). Contexts from this perspective can be explored through the transactions between human and environmental contexts. Thus, the physical, developmental, psychological and socio-cultural contexts of both the person and the environment can be explored to determine the mutual influencing of these in relation to the resulting patterns of behavior, experience and meaning that result. Ultimately, environmental psychology seeks to understand these patterns so that recommendations can be made to enhance the welfare of both people and the environments they occupy.

The systems perspective includes and complements the holistic, ecological, and transactional worldviews through its concern with recursive and complex patterns of mutually influencing transactions in context. One aspect of this perspective is the examination of the impacts of perturbation in systems and how changes in one dimension of a system impacts on other dimensions in both predictable and unpredictable ways. Understanding the impacts of perturbation in systems is crucial to understanding change (Becvar & Becvar, 1996).

The transactional perspective compliments and is enfolded by ecological, systems and holistic theories. It stands in contrast to trait, organismic and interactional perspectives in environmental psychology (Werner et al., 2002). Three dimensions of the transactional perspective have been proposed: holism, the inclusion of temporality as dynamic and embedded in any given context and a patterned-relational view of causality (Werner et al., 2002).

2.2.6 Summary

The conceptual framework described in this chapter is intended to help the reader understand the conceptual attitude of the researcher and the contextual domains that have informed this attitude. By drawing on philosophical, disciplinary, methodological and reflexive domains, the conceptual framework with which I approached the research questions has been illuminated. Alignment between the contributing domains and the overall conceptual attitude of the researcher is

important in any research endeavour, but particularly so in qualitative research. The remaining chapters of this thesis reflect this attitude and the substantive theory presented as a result of the research process is consistent with the conceptual framework outlined here.

Chapter 3: Literature Survey

3.1 Introduction

This chapter provides a literature survey that aims to contextualise the learning space territory, and set a foundation from which the study at hand can be justified, and given a place in the academic and professional field. The literature comes from a wide range of disciplines indicating the trans-disciplinary nature of interest in the design, management and influence of learning spaces on learning outcomes. Literature from the following disciplines has been reviewed to ascertain the main trends of theoretical and applied research pertaining to primary school teachers' design, management and maintenance of learning spaces: education, environmental psychology, ecological psychology, human geography and educational facilities planning. These fields are in themselves trans-disciplinary. Education for instance, draws on philosophy, psychology, and sociology along with its own specialisations in curriculum and pedagogy studies.

This literature survey is in itself a context, which informs a knowledge field. Literature in any field is not only a mirror of the knowledge issues or status in that field but is also a stimulus for knowledge generation in that field. There is a strong link among the literature survey, the purpose of the inquiry and the methodology applied in the thesis. Along with the researcher's own experience and theoretical sensitivity (Glaser, 1978) the extant literature (both theoretical and applied), the actual data collected through the photo-elicited interview process, coding, field notes, memos, and other related matter, form the 'data' that contribute to the conceptual process involved in generating theory.

The substantive field of this particular study is the subjective experience of teachers as they go about their daily work as designers and managers of classroom learning spaces. In order to contextualise this field and establish the justification for the importance of such a study and its possible contributions to the field, the literature surveyed begins with a broad analysis of the learning space discourse as it is appearing in professional and academic journals, government reports, and related sources.

The role of the extant literature pertaining to a field, in grounded theory research varies somewhat according to a range of perspectives. Charmaz (2006, p. 165) claims, "The place of the literature review in grounded theory research has long been disputed and misunderstood." Confusion exists in part due to the contradictory statements made by the original proponents of grounded theory, Barney Glaser and Anselm Strauss (Locke, 2010). On the one hand, Glaser and Strauss point out the need for grounded theory researchers to eschew existing theories while analysing data in order to remain open to new possibilities. On the other hand, theoretical sensitivity was presumed to be achieved through one's broad inter-disciplinary reading, rich reflections on personal experience and accessing the theorizing of others (Covan, 2010). As a result of adopting a perspective whereby the researcher is encouraged to avoid seeing the data through the lens of other theorists, classic grounded theorists delay conducting a literature review until they have completed the analysis for their study (Charmaz, K, 2006).

As a researcher I reject the notion of being *tabula rasa* as I enter into the research endeavour. Additionally, due to the requirements of the doctoral research study process, I have already conducted an extensive literature review in order to situate my proposed research within a discipline at the confirmation of candidature stage. I see the literature survey presented in this chapter as being a context that aids in justifying the need for the research and that informs but not dictates the theoretical canvas that forms the backdrop for my research. I continue to interact with the extant literature throughout the study through the memoing process and in particular in Chapter 7 where the literature from environmental psychology is drawn on to inform my theorizing around the integrating concept, placemaking. I understand that this is a departure from the more traditional forms of grounded theory research practice, however, I am confident that my use of the literature has been helpful in situating the research questions and conceptualising throughout the process. I have adopted a critical perspective on extant literature throughout without being distracted by making this a primary purpose of my reading. The primary purpose was to gain as broad a picture as I could of the various contexts that interact to construct a holistic view of the field I was to research. I was not setting out as a reader to discover the theoretical perspectives of others to integrate into my research analysis and conclusions. Nor was my intention to restrict my reading to a critical analysis of existing research studies related to the study.

3.2 Scope of the literature pertaining to Learning Spaces

The literature that exists in the field of learning space design and management is voluminous and growing. It includes a great deal of commentary on the changing nature of learners and learning in the 21st century, along with the ways that learning to suit the needs of a future cohort of citizens in complex, rapidly changing and 'globalised' economies, needs to develop. The discourse is familiar for educators in the sense that there is a continuing emphasis on creating the optimum conditions in which learning can take place, so that children can reach their personal potentials, and transition from childhood to adulthood through a process of socialisation. The significant change is the importance that space, is now taking in the narratives appearing around learning and teaching, and the roles that space can play in enhancing or delimiting both of these activities.

The term learning space itself is a reflection of an interest in the spatial dimensions of the teaching-learning process, but it is meant to transcend the merely physical aspects of the environments in which teaching and learning take place. It includes less tangible, yet still theoretically potent influences such as the relationships between those that occupy the spaces and the interaction of individuals and groups with Information Communication Technologies to enhance learning (M. Brown & Long, 2006). Tangible and non-tangible aspects of environments are mutually dependent and this is recognised in the current discourse on learning spaces, their design, construction, use and maintenance (Woolner, 2010). Learning space as a label contrasts to classroom and school. These terms represent what are now considered 20th century and more traditional, formal and Fordist conceptions of education (Kalantzis & Cope, 2008).

The main themes of literature that emerge from this review relate to: the impact of changes to learning and learners as a result of technology and social evolution; the necessary curriculum and pedagogy responses to those changes; the design features

of learning spaces that will best promote learning through the interaction of learners, curriculum and pedagogy; the ongoing attempt to identify aspects of the environment that impact on learning outcomes; children's experience of learning spaces; and the pragmatic issues of managing ageing educational assets - refurbishment and the building of new facilities. A small body of literature that deals with the experience of place and the process of 'place making' has emerged from the trans-disciplinary relationship between environmental psychology and human geography.

A range of voices is represented in the literature. State and non-state education authorities, design consultants, architects who are specialising in educational facilities design, school principals, futurists, academics and even global bodies such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the Organisation for Economic Co-operation and Development (OECD) are represented in the literature. A small voice in the literature is that of the children who occupy learning spaces and this is filtered through the research agendas of those researchers who are interested in hearing this voice. An even smaller voice is that of the teachers who are required to design, at a micro level, the learning spaces they manage on a daily basis in the service of facilitating learning for their students. It is this voice that this study is particularly concerned with.

Much of the literature pertaining to in environmental psychology in education settings, is related to the practical application of ideas rather than theorising to explain how and why people behave in or experience learning spaces / environments in particular ways. Very little is known about the teacher experience of designing and managing learning environments despite their central role in managing them on a daily basis as part of their work. The majority of literature relating to teacher perceptions focuses on how teachers react to or perceive environments as opposed to how they design and manage them at the microlevel of what has traditionally been termed the classroom. A significant though fractured body of research that pertains to exploring learning spaces from a people-in-environment perspective has emerged from the discipline of environmental psychology. This body of literature can be expected to yield theoretical and applied material to further our understanding of the relationship between teachers and the environments they work in.

Like the seminal research work done by Rivlin and Wolfe (1985) this study is also taking place in a time of rapidly changing perspectives in educational theory, philosophy, policies and practices. Environmental Psychology has the potential to be a potent tool for enhancing our understanding of how environments and people interact. "For environmental psychologists and other social scientists, the study of schools in light of changing educational philosophies can add to the understanding of an experience that informs much of a child's early years" (Rivlin & Wolfe, 1985, p. 166). Hopefully, the agenda for the transformation of education and the spaces in which it takes place in the 21st Century will not fall prey to the inertia of the past. (Kuhn, 2011; L. G. Rivlin & Wolfe, 1985, pp. 171–178)

A cautionary comment on the evolution of learning spaces to satisfy the needs of a rapidly changing social context is found in the following:

What is surprising about the schools in the 1980s is not the differences from previous generations but the similarities. We should therefore not be over-optimistic about those changes which can be expected to occur during the next generation. Most of the teachers who will be teaching at the end of this century are already teaching. Most of the schools which will be providing

educational facilities are already built...The architectural challenge therefore is to retrieve intelligence from obsolescence.
(Cassels, n.d., as cited in OECD, 1995, p. 15)

Nearly two decades later, the educational facilities that serve Australia are in the same position despite the huge investments in more recent times in new schools and the limited refurbishment of the ageing 1950s and 60s style schools that form the backbone of the asset pool. Even the design of new schools in Queensland is based on similar templates from the past and this is concerning because like our 1950s stock, these schools will be expected to be in service for decades to come. Educational Facilities Planners work on the basis of a new school building being in service for a minimum of seventy years. Even demountable school classrooms are expected to be in service for thirty years (personal communication, Education Facilities Planner, DETE, 2012). In 2012 I visited a new school in Brisbane that was being showcased as a design for the future. Its green or sustainability credentials were impressive and yet, upon visiting the classrooms, I was struck by the sameness of them all. The buildings housing the classrooms were two story, long rectangular boxes, divided up into double teaching spaces each with a small teacher preparation room, an interactive whiteboard, fixed whiteboards for writing, desks and chairs or students arranged in different formations and open shelving for storing resources. These rooms had not changed in design from previous decades of educational facilities planning. One apparently much appreciated feature was the access to outdoor learning spaces but in reality, a small garden area outside a classroom where plants were grown in tubs and the area was fenced off and bordered by concrete paths seemed somewhat sterile to me. I went away reflecting on how this new school was going to fulfill a vision of 21st century learning given the fixed boundaries that formed its very foundations. Classrooms with interactive whiteboards and wireless internet connectivity do not make for the kinds of learning envisioned by the rhetoric of 21st century educational theorists. They still reflect a cells and bells mentality as described by Nair and Fielding (2005). Cells and bells refers to a model of school design that reflects a knowledge transmission approach to education, with discrete disciplines delivered in teacher centred ways through structured time periods in isolated classrooms (cells). The bells punctuate learning periods and act as conditioning stimulus in a behavior setting.

Williams (2006) comments,

...we may be looking in the wrong direction if we believe the saviour of future schooling to be bricks and mortar. One only has to examine architectural advancement in the current range of schools being built. Many have an impressive modern façade, but the basic learning space is still a small box (p. 43).

Additionally, the fact that a school built today has a service life much longer than the educational practices that evolve over time means that, investments in educational facilities can be seen as a limiting factor in relation to educational innovation (Williams, 2006).

There are exemplars of school design emerging nationally and internationally (OECD, 2011a) yet it is clear that in times of economic uncertainty when governments are desperately trying to rein in national debt levels that fiscal restraint will impact on a much needed agenda of ongoing investment in educational facilities. This concern might be balanced by the view of futurists who suggest that the school as we know it today is already redundant and that the only way to deal with the

anachronisms that are at the heart of educational facilities planning, is to embrace the idea of not having schools at all, if what we mean by schools is buildings (Miller, R. et al., 2008).

Already, there are radical innovations being made to some schools but essentially schools remain places in the psyche of society and the idea of education taking place outside of the confines of the bounded spaces we define as school seems a major challenge. This would seem so despite the advances that have been made in establishing 'virtual learning spaces' and the 24/7, mobile technologies that are touted as being the preference of young adult learners today (MCEETYA, 2005).

3.3 Learning Space Milieu

The fundamental problem for research in the field of school design and its relationship with teaching and learning has always been about understanding and explaining how the environment, in which teaching and learning takes place, shapes or influences in some ways the nature, quality and outcomes of that teaching and learning. It is widely accepted in recent times that the physical environment influences human behaviour in complex ways but theoretical models that are derived from empirical research are still lacking after decades of research endeavour.

3.3.1 A diverse but fractured literature base

The literature pertaining to 'learning spaces' is considerable. A number of attempts have been made to organise the literature to bring some sense of integration to it. The literature is derived from such a broad range of disciplines and deals with such a broad range of dimensions of the environment and the teaching / learning process embedded in that environment, that it appears quite fractured. In their literature review on learning spaces and learning outcomes Blackmore, Bateman, O'Mara and Loughlin (2011) found the literature base complex and multidisciplinary being drawn from disciplines such as:

...sociology, environmental studies, psychology, health, architecture and design and within-field specialisms- educational philosophy, curriculum and learning theory (including brain science), occupational health, health and wellbeing, indoor and furniture design, landscaping, ergonomics, environmental psychology and environmental sustainability (p. 5).

Bernard (2012) conducted a review of research on learning environments in an attempt to address the question, "How can schools and other learning places create optimal conditions for learning?" (p. 7) and again, the complexity of the literature base that informs the field was acknowledged. Moreover, the fractured nature of the literature and the difficulty in being able to discern the whole picture owing to the lack of communication between disciplines was considered counter-productive. A call for a freer exchange of knowledge and ideas between disciplines was made. This diversity of commentary and research agendas related to the interaction among learning environments and learning outcomes is hopeful as with such a broad interest base there is more likely to be progress made in our understanding. It is crucial however, for greater synthesis of knowledge and theory to occur, in order to avoid the ongoing fracture between theory and its application in the field.

3.3.2 Temporality, Educational Reform and the context of change

There is a strong temporal dimension to the learning space discourse. Currently there is an explosion of literature dealing with the topic and it is often framed around the labels, Learning Spaces for the 21st Century and 21st Century Learning Spaces or 21st Century Learning Environments (JISC e-Learning and Innovation Team, 2006; Miller, R. et al., 2008; MCEETYA, 2008; Moore, 1994; OECD, 2011). Much of this focuses on the ways in which the lives of learners have been changed by the advent of information and communication technologies that have been integrated into the fabric of daily life. As an example, many primary schools have had to develop policies relating to the use of mobile phones at school. Some require students to hand in their phones to the office for safe keeping during the day. Mobile phones often include internet access packages, so even quite young children can access a broad range of material without monitoring by any school system such as those that apply when a child accesses the internet through a school computer. A typical statement highlighting this phenomenon is provided by Harris (2010):

Today's students are immersed in a world of technology from birth. It is natural for them to live within the internet, rather than using the internet as is likely the case for their teachers and parents (p. 3).

The Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2008) relates the evolution of online affordances to the learning context, pointing to the integration of young people's online lives into the learning enterprise. A major challenge for education facilities planners is to prioritise the integration of online technologies into the learning space design so that new ways of learning and teaching can be promoted.

A common theme in the learning space literature nationally and internationally is the role played by the ubiquitous nature of technology in the lives of young people and how it is shaping their preferred ways of learning, when, where and how they do their learning and the supportive roles that educational facilities can play in these times of rapid change (MCEETYA, 2005a, 2005b, 2008; Oblinger, 2006).

Much is being made of the impact of developments in technology on learning as a process, and on the relevant pedagogical approaches that best promote learning as it is being shaped by the environment of contemporary times. Statements about the nature of learning and the learning styles of students being influenced by the way in which contemporary young people are embedded in ubiquitous information and communication technologies are common, with reference to the current cohorts of learners as being somehow fundamentally different from their predecessors. A clear link has been made among the teacher, pedagogy, learners and learning, and learning space dimensions of schooling. Education authorities, influenced by both educational and architectural theory, regularly publish learning space 'design principles' or 'guidelines' that presumably influence the actual design of new or the refurbishment of older learning spaces, to reflect projections about what the future learning / teaching landscape might look like. A large body of this work is commentary in nature and draws on secondary sources, which are also commentary on theoretical positions drawn from interpretations of actual empirical studies (Atkin, 2011; P. Barrett & Zhang, 2009; Darmody, Smyth, & Doherty, 2010; Miller, R. et al., 2008; Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), 2008; Tanner & Lackney, 2006).

The contemporary literature that specifically deals with learning spaces is set against a backdrop of national and international school reform agendas. There is copious political rhetoric surrounding the enterprise of education in society, and political parties of all persuasions use education reform as an enduring plank in their social policy agendas. The OECD report, *Strong Performers and Successful Reformers* (2011b)) opens with a comment on the United States of America President, Barak Obama's education reform agenda, "Race to the top":

The agenda encourages US states to adopt internationally benchmarked standards and assessments as a framework within which they can prepare students for success in college and the workplace; recruit, develop, reward, and retain effective teachers and principals; build data systems that measure student success and inform teachers and principals how they can improve their practices; and turn around their lowest-performing schools (p.3).

Similar discussions about education are being conducted in the public and professional arenas across the globe. The OECD (2011b) report just quoted includes investigations into the education systems of Canada, Singapore, Brazil, Shanghai-China, Hong Kong-China, Poland, Germany, The United Kingdom, Finland and Japan. In Australia, the Federal Government is taking centre stage in educational reform after wresting significant power from the States to establish a National Curriculum. This was done through a number of complex financial arrangements that culminated in the National Education Agreement and the Schools Assistance Act to ensure both State and Non-government schools' compliance with the implementation of the National Curriculum (Brady & Kennedy, 2010) A National Curriculum is one plank in the agenda of school reform in Australia. National standards for teachers, discussion around performance remuneration packages for high performing teachers, a single national teacher registration body and a national accreditation program of initial teacher education (Australian Institute for Teaching and School Leadership, (AITSL, 2012)) help to fill in the reform framework. Additionally, a national student assessment regime has been instituted (NAP) and applies to all Australian students in years 3, 5, 7 and 9, through the National Assessment Program - Literacy and Numeracy and through the three yearly assessment of science literacy, civics and citizenship, and information and communication technology for years 6 and 10 students (Australian Curriculum Assessment and Reporting Authority, (ACARA, 2011)). A website reporting on individual school performance (My School) has been developed to report on these annual assessments (ACARA, 2014).

These international and domestic initiatives to reform education are a response to rapidly changing conditions in social and economic terms across the planet. (These changes it must be acknowledged are being experienced differentially in different countries and regions.) These include what are referred to by, Miller, Shapiro and Hilding-Hamann (2008) as the macro level drivers of globalisation, changing demographics and the need for new workforce skills and competencies. These largely match the OECD (OECD, 2011a) summary of developments that necessitate new yardsticks for educational success. Economic drivers accompanied by technological, communications and the explosion of knowledge oriented service sectors of developed economies mean that the very aims of education in the 21st century are changing from those of the industrialised past. The notion of knowledge workers with high-level skills in information processing, creative problem solving and pattern analysis is taking over as the core aim of education. These skills form the new basics for education systems (OECD, 2011a).

There is extensive literature dealing with the issue of educational reform and the reasons for it. The educational reform literature addresses structural reform in the pursuit of improved educational (usually meaning academic) outcomes, and curriculum and pedagogy reform. The former approach reflects the rhetoric of agendas such as Race to the Top noted above, and the latter, by the initiatives of academics such as Kalantzis and Cope (2008). In Australia, structural educational reform, was being pursued under the Federal Government's wide reaching Education Revolution agenda prior to a change of government at the end of 2013 (Australian Bureau of Statistics, 2013)

There is a strong link between the driving forces for reform and the investigation of learning spaces. Miller, Shapiro and Hilding-Hamann (2008) outline three phenomena that they consider to be macro-level drivers of reform. They refer to these drivers within the European context however they also apply seamlessly to the Australian context. These drivers are new skills and competencies required for participation in the workforce, demographic changes, and globalisation. Rather than seeing these as being discrete independent variables, they actually influence each other in a mutual way. Changes in one system leads to changes in the others. Across the globe, economies are undergoing substantial change and more so today, than ever before, they are required to be responsive to shifts in those economies that they are intimately connected to.

A cursory search of You Tube reveals many items devoted to the topic of a futures view of the world of work. It is often pointed out that only a short three decades ago, the internet, mobile phones, email, facebook, twitter and other social networking innovations did not exist in their presently popular form. Hence, whole industries with all their associated occupations and work roles did not exist either. There was no mobile phone industry outside of initial exploration of the technology in 1985. The first commercially available mobile phone was released in 1983. The impact of technological innovation on education, daily life, work leisure, the arts, medicine and culture generally have been immeasurable and to a degree unpredictable. Speculations about the future abound but one clear message is that technology will continue to evolve and impact on the lives of people in substantial ways. Many industries and associated occupations will evolve out of our technological advancement and these have not even been thought of yet. At the same time, in order for these to emerge, we will continue to rely upon those foundational disciplines that have got us here in the first place. But, our understanding of these disciplines will also be radically changed.

The issue of skills and competencies for the future is a global issue and of concern to every nation. In Australia, Skills Australia released its Australia Workforce Futures report that proposed a National Workforce Development Strategy, in 2010. The report pointed out that like other economies, Australia is facing increasing competition through globalisation along with an ageing population, skills shortages and a failure to invest in higher education to support the qualifications base needed to address the demands of the future (Skills Australia, 2010). An important and relevant recommendation from the Skills Australia report was the need to grow higher education participation at a pace that will outstrip what has occurred over the past decade. Skills Australia estimated that Australia needs to grow its annual enrolments in tertiary education by 3% per annum for the next ten years.

This is a much faster expansion in domestic enrolments than has occurred over the last decade and will require additional investment, higher levels of student engagement and demand, and improvements in completion rates (Skills Australia, 2010, p. 58).

Davies, Fidler and Gorbis (2011) produced a report for the University of Phoenix Institute for the Future, entitled, *Future Work Skills 2020*. In this report they identify six drivers of change and ten related workforce skills for the future. The six drivers of change that emerged from their research are: extreme longevity (demographic change); the rise of smart machines and systems (technological change); computational world (technological change); new media ecology (new skills and competencies); super-structured organisations (technological change, new skills and competencies); and a globally connected world (globalisation).

The emerging workforce skills required for adaptation to a world that is itself evolving through these drivers include: sense making or the ability to determine the deeper meaning or significance of what is being expressed; social intelligence or the ability to connect to others in a deep and direct way, to sense and stimulate reactions and desired interactions; novel and adaptive thinking, proficiency at thinking and coming up with solutions and responses beyond that which is rote or rule-based; cross cultural competency, ability to operate in different cultural settings; computational thinking or the ability to translate vast amounts of data into abstract concepts and to understand data-based reasoning; new media literacy or the ability to critically assess and develop content that uses new media forms, and to leverage these media for persuasive communication; transdisciplinarity, literacy in and ability to understand concepts across multiple disciplines; design mindset, or the ability to represent and develop tasks and work processes for desired outcomes; cognitive load management, or the ability to discriminate and filter information for importance, and to understand how to maximise cognitive functioning using a variety of tools and techniques; virtual collaboration, or the ability to work productively, drive engagement, and demonstrate presence as a member of a virtual team (Davies et al., 2011, pp. 8–12).

Though economics is implied in the consideration of drivers of reform as outlined by Miller, Shapiro and Hilding-Mamann (2008) it is not as well developed a theme as it could be when one considers recent history. Economics drives many aspects of the education industry, just as it does other industries. Economic considerations can have short, medium and long-term implications for how educational facilities are designed and constructed. In Australia, the then Federal Government responded to the Global Financial Crisis (GFC) of 2008 with an aggressive financial stimulus package to stave off recession and promote workforce retention and job creation. The response was given the name, Nation Building Economic Stimulus Plan. Regardless of the political debates that have surrounded this approach, the stimulus package saw substantial funds being allocated to an initiative known as Building the Education Revolution. Of the \$42 billion allocated for the plan, \$16.2 billion were allocated to school infrastructure initiatives. The Building the Education Revolution funded approximately 24,000 infrastructure projects for approximately 8000 schools across Australia (Building the Education Revolution Taskforce, 2011). Considerable sums were spent in refurbishing existing classrooms. \$8.5 million were allocated to building and classroom refurbishment projects across the five sites from which participants for this research were attracted (Building the Education Revolution Taskforce, 2011). A question arises as to the

extent of funding that might have been budgeted to fund educational facilities upgrading in a country where these assets are ageing and in many cases exceedingly run down and inadequate for a 21st century learning agenda. A massive and unpredicted economic phenomenon can have significant impacts on the education industry as a whole. This in itself has been shown to be unpredictable. A government of another persuasion may have made the decision to adopt a stimulus approach in the face of the Global Financial Crisis but, elected to direct the funds to agriculture, the car manufacturing industry, power generation infrastructure or any other enterprise that it considered reflected its political values. A stimulus approach may not have been adopted at all.

Oblinger (2006) outlines three specific trends that motivated the compilation of her edited e-collection Learning Spaces. Though Oblinger's e-book focuses on higher education contexts, the same trends apply to other education contexts, including primary schools. The trends identified are: changes in students; information technology and our understanding of learning. Oblinger (2006) describes contemporary learners as being somehow fundamentally different from learners of the past. This difference attributed to the immersion of children from birth in a technology rich environment. Along with this environment comes an experiential history that contributes to new collective expectations about what education is and how it should happen.

Students demand interactivity in learning, communication, and entertainment. Multi-tasking and parallel-processing are second nature for many. They engage and work with multi-layered packages of non-linear information comprising images, sound, video, text and graphics. Mobile technologies, chat, blogs, wikis, web cams, reality television and interactive games are intrinsic to their worlds. Current technologies shape their expectations and their abilities to access, acquire, manipulate, contract, create and communicate information (MCEETYA, 2005, p. 4).

Terms such as, collaborative, experiential, authentic, social, informal, personalised and technology enhanced are used to describe 21st century learning (MCEETYA, 2005). Learning in the 21st Century is, like learning in previous eras, a reflection of the sociocultural contexts of the times. The demands for different skill sets, to fulfill the needs of a knowledge based work environment, service industries and technology enhanced environments require that education responds through curriculum, pedagogy and assessment models. These in turn make different demands on the environments in which learning takes place. The industrial cells and bells models of learning space design are redundant in the face of the types of learning that are demanded by a learning intensive society (Miller, R. et al., 2008).

There is a celebrationist discourse running through many of the texts associated with the 21st century learning narrative that needs to be questioned in my view. By using the evolution of digital technologies as the foundation for describing 21st century learners, this narrative ignores issues of access to, and participation in those environments that can afford and have available the technologies referred to. Many groups in even advanced world economies such as Australia have limited access to the resources that are being considered necessary for the learning outcomes desired to serve 21st century workplaces. Inequities exist and may grow if broader social patterns of access to and use of the technologies developed for 21st century education, public and private lives are not explored (White & Selwyn, 2013).

3.3.3 Learning Theory and Learning Space Design

One significant reason given for the current interest in learning space design is that, there have been substantial advances made in learning theory in recent decades and that these advances support a call for rethinking how schools and classrooms have been designed in the past (Atkin, 2011; Dumont, Istance, & Benavides, 2010; Kalantzis & Cope, 2008; OECD, 2002, 2007). How people learn is a perennial problem for those interested in education. This question has been approached from a number of perspectives over time. Philosophers, psychologists, educators and more recently neuroscientists have all made learning theory a substantial enterprise in their respective professional domains. A fundamental concern embedded in this interest is how the environment in which learning takes place, influences that learning, but also from the other way around, how our understanding of the learning process impacts on our learning environment design process (Bernard, 2012).

3.3.3.1 Learning theory and philosophy

Some salient points about the relationship between learning theory and learning spaces are relevant at this point. Learning theory has been as much a matter of philosophy as of psychology in the past and the echoes of philosophical meditations still sound clearly in the educational discourse of today. The question about how people learn has a long history in philosophy. Epistemology as a branch of philosophy concerns itself with issues of the nature of knowledge and how humans can know things about their universe. Epistemology "is concerned with the origins, nature, methods and limits of human knowledge" (Reber & Reber, 2001, p. 246). Hence, epistemological considerations have always been related in some way to educational endeavours.

The relationship between philosophy and education can be traced back to Plato (Phillips & Siegel, 2013). This relationship, which has been profoundly influential on pedagogy and curriculum over centuries, is convoluted, and it can be difficult to determine clear boundaries between what is philosophy and what is educational theory. Like Bateson's quip that, "It is impossible for one to not have an epistemology" (as cited in Keeney, 1983, p. 13) it seems that one cannot, not have a philosophy when it comes to education in its broadest sense. Two influential philosophers (for Western contexts) who devoted considerable efforts to developing philosophical discourses on education were Jean-Jaques Rousseau (1712-1778) and John Dewey (1859-1952). These two philosophers had very different views on learning, teaching and education but they shared a dissatisfaction with the educational trends of the times in which they lived. Bernard (2012) asserts that Rousseau's philosophising has had an enduring legacy for education even into the 21st century. "Rousseau's major impact on 21st century educational thinking lies in his insistence on a child-centred learning environment in which the teacher or tutor acts mainly as a consultant and a guide" (Bernard, 2012, p. 20). Play-based education programs are philosophically linked to the ideas of Rousseau who rejected formal curriculum and championed the notion of teachers as guides to children as they negotiated the developmental transitions.

Dewey followed Williams James, the American pragmatist philosopher and psychologist, in privileging a perspective on education that saw children as problem solvers in a dynamic environment. The role of education was to assist reflection on actions as the source of knowledge development. "The worth of a putative item of

knowledge is directly correlated with the problem-solving success of the actions performed under its guidance" (Phillips & Siegel, 2013, 3.3 Rousseau, Dewey and the progressive movement, para 3). Dewey's legacy for contemporary educators is the centrality of the idea of the active learner through an anti-spectator perspective.

In terms of learning space design and management, philosophies can have a significant impact on practitioner behaviour and on the design and construction of learning spaces. There is often though a profound disconnect between the philosophical and the practical. It is noteworthy that despite the sentiments expressed by philosophers such as Rousseau and Dewey and despite the general subscription of academics and many teachers in education to progressive philosophies that are essentially child-centred, school design has been dominated by an industrial model, that has been the antithesis of the learning-teaching environments and relationships espoused by those who are entrusted to train teachers, and deliver educational programs on a day to day basis in schools.

One's epistemology, whether naive or sophisticated, conscious or out of awareness, influences how one behaves as a teacher. If children are regarded as tabular rasa, vessels to be filled with knowledge from the expert other, then one's pedagogical approach and the design and use of the environment in which learning is to take place will be shaped by this underlying belief. If a teacher considers the nature of knowledge, and the act of human knowing, as being all about a process of construction of meaning within social contexts, then this notion will have different influences on teacher behaviour. The implications for how one designs and manages a learning space might be expected to in some ways to reflect one's epistemological positions. It is my experience as an educator over a thirty-year period, that the epistemological positions espoused by many teachers, including myself, are often in conflict with actual behaviour in the teaching/learning context.

3.3.3.2 Psychology's contributions to learning theory

Psychology's contributions to education have been primarily through learning theory which in conjunction with developmental psychology has informed what has become a significant arm of psychology: educational psychology. Current rhetoric around designing learning spaces to reflect the better understanding we have developed about how people learn draws on the ongoing endeavours of learning theorists to unpack and explain what happens when people learn and under what conditions learning can be optimised given the diversity of characteristics of humans as phenomena. Unfortunately this is rarely made explicit and the nature of the theories and their application to real world contexts is often not adequately referenced so that it is difficult to determine exactly what the relationship between environment and learning might be in anything other than a general sense (Patterson & Williams, 2005).

Predominant learning theories that continue to influence education into the 21st century were developed in the 20th century. They include: Brain Developmentalism, Humanism, Behaviorism, Cognitivism and Constructivism (Eggen & Kauchak, 2004; Kalantzis & Cope, 2008; Snowman & Biehler, 2003). Education as a formal discipline does not have any substantive theory of learning to guide teachers. Learning theory for educators is borrowed from other disciplines. There is much to borrow and education can be seduced by new ideas or versions of old ideas easily. The education market is full of programs and materials that promise much, and that are based in part on defensible ideas that are taken to conclusions often way beyond

what they initially claim or intend (OECD, 2002). Examples can be found in the claims made about multiple intelligence based learning programs and brain based education materials. Left brain / Right brain integration programs, Learning Styles and Aptitude based interventions are further examples of the use of hypothetical constructs that have been adopted unquestioningly by some sectors of the education community.

Learning theory has had an impact on instructional design with particular theories forming the foundation of widely differing approaches claiming superiority in terms of learning outcomes. Direct Instruction is most often associated with behaviourism along with the application of sometimes sophisticated regimes of reinforcement, punishment, and performance measurement. Information Processing based learning strategies using metacognition, working memory, scaffolding, attention strategies, schema production and techniques for dealing addressing the problem of overcoming short term working memory constraints to achieve long term memory of new material are common features of the application of cognitive learning theory in education. Constructivism and social constructivism utilise guided discovery, inquiry approaches, classroom discussions and cooperative learning strategies to support learning that is seen as both an individual and a social construction of meaning as opposed to a mere reception and recording of knowledge that is transmitted by expert others (teachers) (Eggen & Kauchak, 2004; Kalantzis & Cope, 2008; Snowman & Biehler, 2003).

The big three learning theories of the 20th century as noted above are typically silent on the issue of the physical environment and its impact on teacher and learning behaviour and learning outcomes. The focus is on the human psychology rather than the environmental psychology. Each theory has implications for classroom organisation but these are not the main concern in the application of these theories. An exception is the psycho-educational theories of Loris Malaguzzi who established the Reggio Emilia approach to early childhood education in the 1950s. The Reggio Emilia approach makes frequent reference to the environment as the 'third teacher', the child and the teacher being the other two. The explicit consideration of the physical environment in the Reggio Emilia approach applies especially well in early childhood programs, however it is rarely extended beyond preschool in Australian formal education settings. Strong-Wilson & Ellis (2007, p. 41) make reference to the delicate balance needed to provide both structure and encouragement for free expression in the classroom. Teachers in the Reggio Emilia tradition use provocations of the senses to enlist children's interest and to negotiate curriculum (Strong-Wilson & Ellis, 2007, pp. 41–42). The sights, smells, patterns, textures and colours of the learning environment are seen as important catalysts for learning. This approach attracts analysis at the level of affordances on the micro side and place on the macro side. Strong-Wilson & Ellis (2007) for instance refer to the research of Kyatta (2002) whose doctoral work explored affordance theory in children's environments and to that of Chawla (2002) who is known for her work in children's place concepts, including the design of cities and neighbourhoods so that they are more child friendly. David Seamon (1979), the human geographer who developed the construct of place ballet in his thesis also informed the analysis. These constructs are foreign to the individual focused learning theories that have predominated in education throughout the 20th century and so far into the 21st century however, with a growing interest in learning space research and theory they will become more prominent.

Regardless of the learning theory that is reported to inform instructional approaches, there is often a gap between many teachers' espoused theories and theories of action (Argyris & Schon, 1974). This occurs in many professions. An example is offered by an early study into the impact of institutional settings in children's lives (L. G. Rivlin & Wolfe, 1985) where they observed that teachers practices often did not align with what they reported was their main concern:

As we observed the rooms in this school and in others we studied, we found that although spaces and teaching styles varied somewhat across schools, most did not reflect the modern educational philosophies that teachers said they were trying to implement (p. 173).

As a pre-service teacher educator, I challenge students who are required to complete a fifteen day professional experience as part of a course in curriculum and pedagogy to identify the learning theory they espouse and that is espoused by their mentor teachers. I also ask them to reflect on the extent to which their own and their mentor's behaviour aligns with this theory. Prior to going on the block professional experience, most of the preservice teachers report that they consider themselves to subscribe to a constructivist theory of learning. On returning from the experience, and on writing their professional reflections, most note that the learning theories they observed in action in both their own and their mentor's were behaviourist and cognitivist. One of the reasons often given for the subscription to constructivist learning theory is the perception that this is the only theory that university academic staff accept and that other theories are considered redundant in the current educational environment. Another reason provided is that despite holding a belief that constructivism should be a guide to teacher behaviour, the contexts of teaching are constraining and don't allow for the expression of this belief, so teachers fall back on old scripts that ensure that control over the learning outcomes of students is privileged. This personal experience of working in an education faculty is supported by literature. Askill-Williams (2004) provides a review of the literature that deals with this pervasive issue of what we say versus what we do in education.

3.3.3.3 Neuroscience and learning theory

An emerging learning theory, influential in the discourse of learning spaces for the 21st century is derived from neuroscience. Though not a fully-fledged learning theory in itself, neuroscience, and its extension, cognitive neuroscience emphasise the physical origins of learning and the ways that brains are structured to respond to complex physical, social and emotional environments. Evolving technologies of brain scanning are providing insights into how brains are functionally organised and how they operate, as a person engages in certain behaviours. Continued research into brain function and language, literacy and numeracy acquisition is yielding promising educational interventions for children and young people who have difficulties in these areas (OECD, 2002). An increasing understanding of the emotional brain and its relationship to cognitive functions promises to assist educators in the field of social judgment and emotional regulation. These areas are of increasing concern in contemporary schools as it is apparent they have significant impacts on learning outcomes. Additional information emerging from neuroscience research relates to the notion of a life long learning brain and brain plasticity. Both these ideas have potentially significant potency in education (OECD, 2002, 2007).

Perhaps one of the most useful contributions of neuroscience to education to date is the dispelling of a number of neuromyths that have emerged in recent

decades. These neuromyths have driven the marketing of an enormous range of products, services and programs that promise much to the families of children and young people experiencing difficulties in learning, but that are founded on misinterpretations of scientific evidence. The most prominent neuromyths identified by OECD (2007) relate to: the developmental potentials for learning in terms of age; the idea of critical windows of opportunity for learning certain things; the notion of isolated brain structures working independently of the rest of the brain; left and right brain personalities; gender and brain function; the improvement of memory through mental exercises; being able to learn in one's sleep. Further:

These misconceptions often have their origins in some element of sound science, which makes identifying and refuting them the more difficult. As they are incomplete, extrapolated beyond the evidence, or plain false, they need to be dispelled in order to prevent education running into a series of dead ends (OECD, 2007, p. 16)..

As already noted, learning theory has been relatively silent on the matter of the influence of physical environments on learning and behaviour. The focus has been mainly on the individual psychology of the person. The same may be considered true of neuroscience. Educational facilities planners and architects are developing an interest in what neuroscience has to say about the environment and its influence on learning and behaviour. Lackney (2002) developed a set of twelve design principles based on brain-based learning research following a Designshare workshop facilitated by the architect, Randall Fielding. (Nair, Fielding and Lackney published their book, *The language of school design: Design patterns for 21st century schools* in 2009. They are the founders of DesignShare.com). The twelve design principles set out by Lackney are meant as a set, not a list of individual items. The complex interactions among the elements are as important as any one item of itself. The reference by Lackney to the 'place' construct in his summary of the workshop that informed his design principles is of interest. The key messages from Lackney's (2002) reflections on design principles and brain-based learning principles are that schools, including the facilities that make up the built environment of them are complex systems. The physical dimensions are one part of this complex system. Holistic ways of looking at school design must include social, organizational, pedagogical and emotional aspects as these contribute to the experience of school as a place. Only holistic design processes are capable of capitalising on the promise of neuroscience for guidance on design patterns that enhance the brain's capacity for learning. For instance, if emotions are involved in learning, and sensory stimuli impact on emotions, then attending to the design aspects that demonstrate the enhancement of emotional experience could be a valuable area for research. Lackney (2002) alludes to this through his mention of the need to embrace the concept of place as opposed to thinking of space design.

3.3.3.4 Ecological Psychology and Learning Theory

A final theory of learning that deserves some review is derived from ecological psychology and builds on the perceptual psychology of James Gibson and ecological systems theories. Barab & Roth (2006) have synthesised these theories in an attempt to articulate an ecologically oriented learning theory. Barab and Roth (2006) have set about interpreting the major tenants of Gibson's affordance theory of perception for teachers. They have also extended these to:

providing a language for educators, who, while interested in perception, have an additional focus on supporting cognition, participation, and development, requiring the detection of, and participation in, extended possibilities for action (affordance networks) that are both materially and socially distributed (p. 4).

The ecological psychology paradigm requires a shift in view from learning being centred in the individual, to the site of learning being the interaction between goal directed individuals or groups, who have developed certain effectivity sets, with affordances or affordance networks, in context. Learning, like perception, from the ecological psychology view is "a property of an ecosystem - not of an agent" (Barab & Roth, 2006, p. 4). This view is countercultural in Western societies and requires considerable effort to see as an explanation for human learning, which has hitherto been delimited by traditional learning theory, to the mental processes of individuals in response to the stimulations provided by an environment under certain conditions. Barab & Roth (2006) argue for an ecological theory of knowing that explains learning in terms of the complex interactions among affordance networks, effectivity sets, the sociocultural context in which the individual is embedded and the life world of the individual. Learning is said to be the meaningful actualisation of particular affordance networks that exist in the environment, and that can be actualised through the application of effectivity sets, that are capable of functionally coupling with affordances in order to achieve goals. Deep learning that is transferable, is best achieved by stimulating participation of learners in such a way that affordance/effectivity set coupling is achieved (Barab & Roth, 2006; Young, Barab, & Garrett, 2000).

Affordance networks are an extension of Gibson's (1986) concept of affordances in that they are considered to be culturally determined and include scientific, economic, political and other dimensions. Barab and Roth (2006) define affordance networks as being,

the collection of facts, concepts, tools methods, practices, agendas, commitments, and even people, taken with respect to an individual, that are distributed across time and space and are viewed as necessary for the satisfaction of particular goal sets (p. 5).

Reference to Gibson's (1986) concept of affordances needs some clarification for the concept has been contested in the literature, not so much from the perspective of it not having relevance, but more as to what it actually means.

Jones (2003) reviews Gibson's evolving descriptions of affordances from 1938 to 1986 highlighting the subtle shifts in the theory as time progressed. The core dimension that remained consistent throughout the period was the attempt to explain the seemingly direct perception by animals and humans of the environment, as opposed to mediated models of perception such as those proposed by cognitive psychologists. The idea of affordances deals with this issue by asserting that, counter to traditional psychological views, perception involves discrimination of the various properties of objects of the environment, and then reaction to these discriminations. What we actually perceive is what objects afford us in terms of our intentional behaviour (Gibson, 1986; Jones, 2003). Other authors have attempted to refine the definition of affordances by drawing from Gibson's original work (Chemero, 2003; Michaels, 2003; Stoffregen, 2003; Turvey, 1992) but have not applied the theory to education or to learning specifically. Barab and Roth (2006) along with Young, Barab & Garrett (2000) make a valuable contribution in their analysis of affordance

theory and application of this to learning theory and education. Of particular value, is the contribution that their theorising can make to the learning space discourse.

The innovative use of affordance theory in educational contexts by Barab and Roth (2002) and Young and Garrett (2006) makes a review of the main ideas used in their analysis necessary. As indicated above, the application of affordance theory to learning and education has led to an extension of Gibson's definition of affordance. Acknowledgment is made for instance of the socio-cultural dimension of affordances and the evolving nature of affordance networks. Affordance networks are made up of nodes that can be disentangled from the network artificially or can be examined as individual nodes, but in doing this they are decontextualised and delimited, thereby constraining ecological knowing. Affordance networks have value in particular contexts where particular intentions or goals require a performance related to the realisation of those intentions. As such, "they are bound up in contexts of participation" (Barab & Roth, 2006, p. 9).

A practical educational example of an affordance network would involve students undertaking a project to design a toy for possible manufacture and marketing to a school community. Concepts (design principles, safety, leisure, strength of joints), facts (units of measurement, qualities of materials), tools (various - saws, glues, scissors, knives, staplers, tapes, paints, computer assisted design and drawing programs), participants (individual students, design teams, problem-solving teams, marketing teams, experts), commitments (contracts for the completion of the project), and agendas (timelines, guidelines for working in teams) are all involved in a project context. Each of the nodes in the network could be isolated but they would lose the connection to the intention and possibly, in their isolated state, be counter productive in terms of participation and negatively correlated to the transfer and generalisation of learning. Furthermore, the nested affordances in the example above that constitute an affordance network are themselves examples of networks with nested affordances within them. For instance, the tools include sets of tools for cutting, gluing, painting, fastening and representing. A knife affords cutting, but only of certain substances that are somehow fitted or matched to the qualities of the knife. A butter knife will not cut a wooden block. All these affordances when seen in relation to the other affordances of the network, in association with the intentions that guide participation, facilitate meaning making.

The relationship between affordance networks and effectivity sets is complementary. Affordances and effectivity sets cannot exist without each other. They give meaning to each other through functional coupling in the context of people engaging in goal-oriented behaviour.

Functionally defined, an effectivity set constitutes those behaviours that an individual can in fact produce so as to realise and even generate affordance networks...effectivity sets are always coupled with and must be understood in relation to, particular affordance networks; and they always occur in the service of particular goals (Barab and Roth, 2006, p. 6).

Additionally, recognising and applying an effectivity set requires the individual to be able to attune or be in resonance with the "nested affordances that constitute the network" (Barab & Roth, 2006, p. 6). Developing effectivity sets in tune with affordance networks is learning. Humans are perceivers of patterns of affordances and patterns are far easier to integrate into a behaviour repertoire than are isolated facts or skills. Effectivity sets associated with affordance networks are very efficient

for learning as they are transferable to similar contexts in which similar goals are to be achieved.

An everyday example of the application of these ideas about affordance networks, effectivity sets, intention and ecology follows. I live in a rural area on an acre of land and I have a pet dog Sam who lives with me. I enjoy Sam's company and feel responsible for his health and wellbeing, and there are also laws that apply to keeping dogs that I am obliged to comply with, apart from the moral obligation I feel towards him as a fellow being on planet Earth. In order to give Sam exercise and also to also keep him entertained and interested in my company, at regular intervals each day I take him into the front yard to play ball. This also keeps him from straying away, which he can do as I do not have a front fence. I do not have a strong arm and cannot throw a ball very far and Sam is a medium sized dog. He can run very fast and likes to chase the ball. To overcome my limitations in the ball throwing area I purchased a device that acts as an arm extension. It is about forty centimeters long, is made of a flexible yet durable plastic material, is slightly curved and has a round cup on one end that fits a tennis ball into it snugly. When I act as if to throw the ball that is in the cup, the device flicks and projects the ball forward. I can throw the ball an incredible distance with almost no effort. The device provides projectability of a ball. I use my effectivity set of being able to hold the device (it affords graspability) and to move my arm in a throwing action. I also can see where to throw the ball to, and adjust my aim, and how much energy to put into the throw so that the ball does not go onto the road. The affordances of the device work with my effectivity sets, the affordances of the ball (it bounces so that Sam can jump high into the air to catch it - he likes this - and he can carry the ball back to me easily in his mouth), the affordances of the landscape, Sam's effectivity sets in relation to the ball, to me, the chasing, and bringing back of the ball, and the pattern of the 'game' constitute an affordance network. Sam knows the cues that indicate the game is about to begin and he knows that when I say, "Finished now" it is time to return to the house where he rests. When I say that Sam knows I mean that in the flow of his experience, he is able to perceive affordances and to apply effectivity sets in a context of relationship. Sam does not merely persist with our game because I may want to. If it is hot for example he will drop the ball several meters away from me and retreat to the shade of a tree.

In this example, there is intention, affordance networks (for me and for Sam), effectivity sets (for me and for Sam) and a context for behaviour that requires actualising nodes within the affordance networks through application of the effectivity sets that are functionally coupled with the affordances. My initial intention, to help Sam stay fit and to motivate him to stay at home is satisfied. Moreover, I have found a great sense of enjoyment in this routine and I have found myself reflecting on how this activity contributes to my psychological sense of place: place identification, place attachment and place dependence. This scenario has potential to give rise to additional affordance networks or overlapping networks that might facilitate the development of additional effectivity sets for both Sam and myself as we continue to actualise affordances in our environment. Hence this routine is but a small slice of the flow of life that I lead but is an adequate example of the ecological nature of behaviour and the application of affordance theory to it. Barab and Roth (2006) assert that,

knowing a network means understanding not only the elements of the network but also the contexts and intentions in terms of which the various

elements make sense; that is; having a meta-contextual awareness (appreciating the relations among content and context) of when an effectivity-affordance coupling is realisable (p. 6).

This knowing is what allows for the learning of complex sets of tasks that apply to various contexts of life, from being able to play ball to being an expert cardiac surgeon.

3.4 The learning space design literature.

A number of authors have articulated sets of principles for learning space design (Atkin, 2011; Barrett & Zhang, 2009; Darmody, Smyth & Doherty, 2010; MCEETYA, 2008; Miller, Shapiro & Hilding-Hamann, 2008; Tanner & Lackney, 2006). The sets of design principles differ according to the focus of the authors, however, it is usual to provide a rationale for change, based on the changing demands of 21st century society (especially economic drivers, social diversity, globalisation and information communication technologies), the evolution of understanding of learning and associated pedagogical implications and the changing profile of the 21st century learner, often referred to as the new learner (Atkin, 2011; Kalantzis & Cope, 2008). Kalantzis and Cope (2008) contrast mass institutional education and progressive educational modernisation with new learning by analysing these across eight dimensions. Of particular interest in the analysis undertaken by Kalantzis and Cope (2008) is their inclusion of the following dimensions: The social significance of education; The institutional locations of learning; The tools of learning; and The outcomes of learning (p. 15). These dimensions inform what these authors refer to as Architectonic Meanings. These "Architectonic meanings are those expressed by a physical setting; they are the spatial designs that shape the way people relate to each other" (p. 21).

Miller, Shapiro and Hilding-Hamann (2008) take a futures oriented approach building on predictions of the development of a Learning Intensive Society by 2020 in the European context. They contrast these future spaces with the "usual screening, testing, credentialising, socialising, or custodial functions characteristic of the education LS of the industrial society" (p. 37). They assert that the nature and purpose of learning in the learning intensive society is such that a very different set of design principles is required to create the learning spaces that will satisfy the demands of the learning intensive society. "Compared with the cognitive and behavioural requirements of industrial learning in 2008, the LIS scenario depicts a profound transformation in both what and how knowledge is valorised and its acquisition organised" (Miller, Shapiro & Hilding-Hamann, 2008, p. 37). These authors outline eight features of learning spaces that have design implications: Personal digital spaces; Connecting and social spaces; Trusted spaces; Motivating and emotional spaces; Controllable, creative/experimental, open/reflexive spaces; Evaluated and certifies spaces; Knowledge management; and Inclusive spaces (Miller, Shapiro & Hilding-Hamann, 2008, pp. 39-46).

The Learning Spaces Framework developed by MCEETYA (2008) set out guiding principles to "constitute a high-level strategic guide for the design of new schools, the re-development of schools, and the re-purposing of buildings and learning spaces to maximise student performance" (p. 6). The principles were articulated as follows: Flexibility - supporting; Inclusivity-accommodating; Collaboration-enabling; Creativity-achieving; and Efficiency-delivering. These

principles are integrated with the four organising elements of the Learning Space Framework that work together to achieve enhanced learning outcomes. The organising elements are: changing the culture of schooling; creating ICT rich learning spaces; designing spaces for learning; and planning and decision making (p. 7). At the micro-level of design, consideration of both tangible and intangible elements of the environment are considered: daylighting; ventilation, colours, textures, patterns, formal and informal furniture, adjustable lighting, acoustics to support learning, wireless connectivity, the availability of mobile technology with access for all, furniture that can be easily reconfigured for different pedagogical styles. All of these elements and more are seen as working together to create a whole that is greater than the sum of its parts. The focus is notably not on classrooms per se. Learning spaces are seen in the context of the whole school and the school as embedded in a community.

The JISC e-Learning and Innovation Team (2006) focuses on learning spaces in higher education contexts, however, the design guidelines they have published match those of other authors concerned with education more broadly. JISC (2006) again, describe learning spaces as being far more than a classroom space. Their design guidelines refer to the whole of the organisation in spatial terms as opposed to parts of it. Flexibility is considered key and this refers not to the present moment only but also to consider the future possibilities of technology evolution. Buildings are expensive and enduring. They need to be designed in such a way as to allow for pedagogical and technological evolution. This relates to the concept of future proofing whereby spaces are designed so that reallocation and reconfiguration are a capacity (JISC, 2006, p. 3). A design guideline of note from JISC refers to the concept, enterprising, which is described as the capacity "to make each space capable of supporting different purposes" (p. 3). Other qualities encouraged by JISC (2006) include designing spaces to be: bold, creative and supportive, motivating, collaborative, personalised and inclusive (p. 3).

Tanner and Lackney (2006) offer a set of thirty-one design guidelines which they claim "are derived from...the reflective practice of educators and design professionals to the empirical research of environmental psychologists and educational researchers" (p. 25). Underlying all of the principles offered by Tanner and Lackney (2006) is the "premise that all learning environments should be learner-centred, developmentally and age appropriate, safe, comfortable, accessible, flexible and equitable in addition to being cost-effective" (p. 25). The thirty-one principles outlined by Tanner and Lackney (2006) are too detailed to repeat in this review, however it is noteworthy, that like other sets of principles offered in the literature, these authors take a broad view of what constitutes a learning environment. They take a contextual approach in that the guidelines deal with design at different levels of an education facility system. The contexts include the building or site in the context of neighbourhood community, the context of primary educational space, the context of shared school and community facilities and the context of outdoor learning spaces. Clearly, learning and teaching are not considered to be confined to 20th century conceptions of the classroom, populated by one teacher catering for 25-30 individual learners.

Barrett and Zhang (2009) outline their set of design principles for primary school design by drawing on 'Senses, Brain and Spaces' research undertaken through the Salford Centre for Research and Innovation (p. 2). The principles developed are: Naturalness; Individualisation and Appropriate level of stimulation. These principles

are applied to different design contexts for schools: Plan & Envelope - location, orientation, layout, appearance & windows; Spaces - rooms, circulation & outdoors. The elements of naturalness reviewed are: light, sound, temperature & air-quality. The elements of individualisation are: choice, flexibility & connection. The elements for level of stimulation are: complexity, colour & texture (p. 3).

Barrett and Zhang (2009) synthesised their principles for school design from their reading of the literature pertaining to "the impact of learning environments on pupils' achievement, engagement, affective stage, attendance and wellbeing" (p. 2), along with the findings from their research using post-occupancy evaluations of five primary schools in the Manchester City area. These authors published a separate article reporting on the post-occupancy research in 2010 where they reported on a "gap between design expectations and the performance achieved, primarily because the occupants are usually simply coping with the given environment rather than actively managing it" (Barrett & Zhang, 2010, p. 1). This finding is important as much of the literature relating to design guidelines fails to address the issue of how the affordances (Gibson, 1986) of well-designed spaces actually become realised by those who work in them on a daily basis. The best designed learning spaces may put a degree of pressure on teachers and students to behave in particular ways and facilitate certain subjective experiences that poorer designs might fail to facilitate, however, it has already been noted that this may not be sufficient to promote transformative teaching and learning. Similar experiences are reported by those concerned with the introduction of ICTs into classrooms. The mere presence of a set of laptops or desktops will not guarantee teacher adoption of the affordances of these technologies.

Barrett and Zhang (2009) tie their design principles closely to their reading of the literature on the impact of what can be called tangible aspects of the physical environment on student learning and other outcomes, such as attendance. They begin each section of their report with a brief review of the literature that indicates the impact of the relevant environmental feature on student performance. They then go on to unpack the implications they have derived for the design of primary schools. An attempt is made in this report to make connections between the emerging literature on neuroscience and how it might inform the developing understanding of connections among teaching, learning and school design:

Combinations of pleasantness and different levels of arousal yield either excitement or relaxation. When the level of stimulation is appropriate for given situations, certain reactions take place positively in the brain and mind, affecting mood, mental clarity and energy levels (Barrett & Zhang, 2009, p. 25).

Darmody, Smyth and Doherty (2010) derived a set of design guidelines for primary schools in Ireland, from a study they completed to address a gap they saw in the literature that addressed primary school design and its impacts on the various stakeholders who occupy them. These authors expressed a concern over the dearth of empirical research being conducted to substantiate claims being made about the nature of impact of environments on schooling. Additionally, despite the widespread acceptance of the evidence that does exist of the potentials for environments to impact negatively and positively on schooling, "existing international literature on children's environments has tended to be fragmented and isolated" (Darmody, Smyth & Doherty, 2010, p. 2). This fragmentation is due to the lack of connectedness

between the many disciplines involved in commentary and research in this field and the numerous stakeholders who are being consulted on design issues. When one considers the literature from various disciplines it is difficult to knit the themes into a cohesive narrative. Human geographers, environmental, eco-behavioural and educational psychologists, educational leaders, educational theorists, architects, educational facilities planners, neuroscientists, futurists and politicians are among the many sources of commentary on school design for the 21st century.

The study by Darmody, Smyth and Doherty (2010) was exploratory to address what they considered to be the gap in the research agenda to bring coherence to the field. They were particularly concerned with the local context of Irish schools and also to obtain the perspectives of stakeholders such as teachers and students, given the lack of empirical studies that achieve this aim. Their review of the existing literature moved from the broader contexts of school size, class size, buildings and classroom practice, to classroom focused issues such as layout and seating and the use of ICTs. The report then moves on to individual environmental factors such as; density, lighting, noise, colour, air quality and temperature, and furniture (Chapter 2). The literature review concluded that owing to the, "dearth of systematic and comprehensive empirical research in the area of school design that considers interaction between design and environmental factors and teaching and learning practices in primary schools" (p. 28), an exploratory study to gain an understanding of the nature of the relationships between school design and person-in-environment behaviour and experience was justified. The authors used their findings to generate a set of recommendations that they considered were "central principles to be taken into account in the future design of primary schools in Ireland" (p. 105).

The design principles proposed by Darmody, Smyth and Doherty included the domains of: school size and location; class size and layout; other indoor spaces; outdoor spaces; and teacher education and training. The recommendations verified empirically, other research reports reviewed in that issues around; flexibility, mobility, daylighting, embedding of ICTs, movable and comfortable furniture, circulation areas, use of outdoor spaces, safety, noise, temperature and air-quality control and inclusivity; are all seen as important elements of the design process by teachers and students as well as professional educational facilities planners.

The literature reviewed that outlines sets of design principles or guidelines for educational facilities or learning spaces has a pattern to it that gives a structure to the thinking of the field in a very general sense. Consideration is given to the broader socio-cultural contexts in which schooling takes place. Acknowledgment is given that schooling is a huge social enterprise with enormous budgets allocated for facilities and for staffing and that projections for future needs indicate increasing costs to societies as populations increase in size and diversity. The evolving globalised knowledge based economies of the 21st century are seen as a major driver for innovation in the field of school design given the changing workforce skills demanded by these new economies. These new workforce skills are mirrored in the ways that 21st century learners are immersed in information and communication technologies and the affordances for participation in social interaction and action that they bring. There is a perception that 21st century learners are somehow different from their predecessors in learning styles but the learning theories used to justify such claims are very much 20th century rooted. This is true also for claims about how the educational enterprise now understands the learning process and the pedagogical approaches that are most effective. Constructivism and social constructionism are

often appealed to as the sources of this understanding. These theories are not 21st century. Regardless, a refocusing on learning theory to inform pedagogical approaches is certainly emerging. The role of neuroscience in assisting educators in their pedagogical endeavours is a recent addition to the literature. These developments, applied to the field of learning space design and use, are threads that tie some of the more prominent commentaries in the field together.

3.5 The impact of the environment on learning outcomes literature.

A final substantial literature base that furthers the research agenda of learning space design is that, which seeks to describe and explain the impact of learning environments on learning outcomes. It is prudent to bear in mind that the social and financial investment in educational facilities in developed countries is massive and becoming bigger. As noted earlier, there is an economic and political backdrop to school facilities construction and refurbishment. Politicians in particular are keen to justify expenditure by appealing to evidence that, improving the overall design of schools will lead to improved learning outcomes (Woolner, Hall, Higgins, McCaughey, & Wall, 2007). Improved learning outcomes, are usually interpreted to mean academic outcomes and academic outcomes are most often considered in terms of literacy and numeracy proficiency. What learning outcomes actually constitute, is difficult to determine and how to measure them even more so. Higgins, Hall, Wall, Woolner and McCaughey (2005) reviewed the literature on the impact of learning environments on outcomes and considered outcomes using a multi-dimensional framework of: attainment, engagement, affect, attendance and well-being. These authors reviewed literature on the impact of, temperature /air quality, noise, light, colour and other school build features, such as outdoor spaces and ceiling height across the outcomes domains mentioned. A constant problem for researchers in this area is the large number of variables involved in any study and the potential for so many variables to interact in ways that confound results. It is difficult to conclude if the improved academic performance of students on standardised reading tests, when they are taught in classrooms with enhanced daylight and views, compared to students in artificially lit rooms with less window space, is due to: the daylighting influence or due to the influence of daylight on teacher attitudes and behaviour, which impacts on teaching, which impacts on student attitudes and behaviour, which impacts on learning generally, which might impact on reading skill development. Additionally, can we conclude that the daylight factor over-rides all the other factors that could be influencing performance on reading tests, including the conditions under which testing takes place and the tests themselves?

A research project undertaken by the Herschong Mahone Group (1999) investigated the impact of daylight in classrooms on academic performance in schools across three districts in the United States of America, in grades two to five for one year. This study has been updated by using the same research methods as the initial study, in two other school districts. The researchers used existing student performance data to determine a rate of performance increase over the year, along with data that rated classrooms on the daylight qualities they exhibited. In order to determine a correlation between increases in performance on standardised reading and mathematics test scores, and attending school in rooms with adequate levels of daylight, the researchers needed to include a large number of variables in their multivariate linear regression analysis. Fifty variables were included as possibly having an impact on student performance other than daylight (Heschong, Wright, &

Okura, 2002). Edwards and Torcellini (2002) claim that this number of variables "created less confidence in the study results" (p. 25). However, the researchers made very significant attempts to test their findings statistically and in particular accounted for possible 'teacher effects' (Hershong, Wright & Okura, 2000). The findings of the daylighting study were that, "Variables describing the physical conditions of classrooms, most notably the window characteristics, were as significant and of equal or greater magnitude as teacher characteristics, number of computers, or attendance rates in predicting student performance" ("Heschong Mahone Group, Inc. - Daylighting and Productivity," 2012, The importance of school design choices, para. 1).

The Hershong Mahone Group ran into difficulties when it extended its study to a third school district and found conflicting results when using the same *Daylight Code* system as they had in the previous two districts studied. What is most interesting is that the researchers had to revisit their sites in the third district and consider a new range of variables that potentially confounded their expected results. These included; view-related distractions, glare, acoustic factors, air quality, thermal comfort and the presence of operable windows. In short, other external environmental variables that can all interact to impact on any one person's performance on any given day.

The findings that there were unexpected interactions among variables such as air quality, teacher operable windows, and an asthma epidemic in the population, all demonstrate how difficult it is to make definitive statements about linear cause-effect relationships between individual elements of the environment and learning outcomes. Correlational studies are helpful but not explanatory, and one needs to be cautious about the implications drawn from this type of study when considering the diversity of contexts that they might be applied to. The Hershong Mahone Group studies were hypothesis generating as opposed to theory building and their conclusions lead to new questions about why there is an apparent positive impact of daylighting on standardised reading and mathematics scores for children in grades two to five in the schools represented in the studies. Taking into consideration all the possible environmental features that could be investigated and their interactions, it is no wonder that the outcomes literature is fractured and inconclusive.

This is reflected in literature reviews. Higgins, Hall, Wall, Woolner and McCaughey (2005) claim that, "It is difficult to come to firm conclusions about the impact of learning environments because of the multi-faceted nature of environments and the subsequent diverse and disconnected nature of the research literature" (p. 6). Blackmore, Bateman, Loughlin, O'Mara and Aranda (2011) agree with Higgins et al (2005) pointing out the various fields of research that inform our understanding of the complexity of student performance generally. These include school leadership, teacher-student interactions, family and socio-economic status backgrounds, prior learning, student mobility, access to technology, disabilities (learning, sensory and physical), social emotional wellbeing and mental health, curriculum change and education system restructuring.

Additionally, there is a paucity of literature in this field that actually focuses on how space is used as opposed to how aspects of it impact on behaviour. The built environment is but one, all be it multi-faceted influence on human behaviour. The built environment interacts with the natural environment in tangible and intangible ways and this interaction is variable across the geography of the planet. Picking off possible environmental influences for study one by one will make for a very long

research career but seems to be a questionable approach given the results so far achieved over decades of research. Woolner et al (2007) cite Weinstein's (1979) conclusions about the lack of evidence for a direct relationship between student achievement and specific environmental influences beyond a demonstrated impact on teacher and student attitudes and behaviours. They acknowledge that other more recent commentary is more positive but finally conclude that there is insufficient evidence "to give clear guidance to policy makers on how to set priorities for funding, or to evaluate the relative value for money of different design initiatives" (p. 60).

The claim being made is that the real value of research into environmental impacts on learning, so far appears to relate to a developing understanding of the detrimental effects of certain factors on learning outcomes and associated behaviours such as school attendance. Run down, poorly maintained, poorly designed school buildings with artificial lighting, poor temperature control, poor air quality, excessive noise, drab colours, and small windows looking out onto a concrete or asphalt landscape devoid of greenery, create demoralising and alienating environments for children and teachers alike. High rates of absenteeism, behaviour problems, lack of connection or sense of belonging, and concomitant subdued academic performance (under-performing) are evident in such places (Durán-Narucki, 2008). Remedial action to improve these types of schools to bring them to an acceptable standard can have significant impact. Acceptable in this context means being compliant with current standards and codes determined by education authorities. Arguing for moving beyond these interventions on the basis of the research to date on the impacts of particular environmental features is proving difficult.

Linking the design of learning space to what kinds of learning activities are intended to occur in them, is emerging as an alternative way of conceptualising the problem of how to enhance learning opportunities, access to, and participation in curriculum, and to improve learning outcomes holistically through the intentional design and use of space in schools. Fisher (2005) advocates such an approach by proposing a model that first looks at the principles of effective curriculum and pedagogy, the pedagogical activities that align with these principles and then the design implications.

3.6 Environmental Psychology's Contribution

3.6.1 Background on Environmental Psychology

Environmental Psychology emerged as a discrete arm of psychology in the late 1950s in the United States of America, with research undertaken by Ittelson and Proshansky into how the physical environment of psychiatric hospitals affected patient behaviour (Bonnes & Secchiaroli, 1995). The publication of *Environmental Psychology: Man and His Physical Setting* (Proshansky, Ittelson, & Rivlin, 1970) is cited as being the first edited book using the term Environmental Psychology in its title (Bonnes & Secchiaroli, 1995). The discipline has a complex history and defining it in unambiguous terms has proved challenging. Perhaps this is so because of the many external influences involved in its evolution and the number of other disciplines that have a research interest in people-in-environment interactions. Sociologists, human geographers, architects, anthropologists, bio-ecological sciences, and environmental planning have all been active in researching human

interactions with the environment. In reports on learning spaces and their impact on learning it is common to find a substantial array of research traditions cited (eg. Barrett & Zhang, 2009). Additionally, within psychology itself, there have been alternative paradigms applied to the human-in-environment problems for research. Bonnes and Secchiaroli (1995) provide a summary of the contrasting approaches to research applied by psychologists interested in physical-perceptual problems and who research these problems using a molecular approach, and the social psychologists who research from a molar viewpoint (p. 21). These two research agendas represent two very different views of human relationships with the environment and both have been subject to critique. The molecular approach is criticised for decontextualising subjects and lacking in ecological validity, whereas the molar view is critiqued for its inability to realise its wide theoretical program “in common research praxis” (Bonnes & Bonaiuto, 2002, p. 30).

A dichotomy emerged early in the evolution of Environmental Psychology as a discipline. On the one hand, researchers were concerned with "attempts to isolate physical dimensions (e.g., noise, temperature, space) of the broader milieu in order to assess their specific effects on behaviour" (Stokols, 1978, as cited in Bonnes & Secchiaroli, 1995, p. 71). On the other hand there was a view held by many that the environment needed reframing as a system of complex interactions between people and the natural and built dimensions. There is in this view, a psychosocial dimension that sees people and the environment in a mutually shaping relationship.

In contemporary environmental psychology, environmental determinism is shunned in favour of a paradigm that acknowledges the capacity of humans to construct a reality that is at once individual and local, and collective and general. This constructivist approach builds on Barker's seminal work on behaviour settings as it addresses the criticisms of that construct in relation to its lack of a psychological perspective, and silence on how setting change happens (Bonnes & Secchiaroli, 1995). What emerged as an extension of Barker's behaviour setting theory is the place construct as theorised by Canter (1977) Stokols and Schumaker (1981) and Russell and Ward (1982) (as cited in Bonnes & Secchiaroli, 1995). A number of other constructs associated with place have emerged in the literature along with it: psychological sense of place, place dependence, place attachment and place identity (see Jorgensen & Stedman, 2006).

It would be more accurate to say that four research traditions were involved in the evolution of the discipline and that each of these continue to influence specific research agendas in their own way (Bonnes & Bonaiuto, 2002). The study of human perception using mainly experimental and laboratory situated research (including Gibsonian affordance theory); the physico-spatial approach to environmental psychology; ecological- behaviour settings (ecobehaviour science / ecological psychology) as developed by Roger Barker and associates; and the psychosocial approach to environmental psychology. The latter three approaches depend more on a molar approach in research. The molecular and molar approaches to research refer to different levels of analysis of the person-environment relationship. The molecular approach or in the context of environmental psychology, the physico-molecular approach is associated closely with the psychology of perception field. This approach, “places specific attention on the discreet sensory-perceptual features of the environment, considered to have direct correspondence at the sensory-perceptual level” (Bonnes & Bonaiuto, 2002, p. 30). The molecular tends to see the person and the environment separately with analysis being at the level of the impact of specific

aspects of the environment on human behaviour - e.g., the influence of the type and level of lighting on distractibility of preschoolers. The molar level of analysis refers to people-in-environments, and the transactions that occur between the two. For example Barker's (1968) behaviour settings research analysed standing patterns of behaviour to demonstrate that the environment is a good predictor of human behaviour en masse regardless of individual variations in psychology, motivation, traits or gender.

The literature on each of these fields is dense and voluminous. It demands an understanding of the philosophical, as well as the psychological roots of each, and the relationships between them. Each area sits within a contextual field of complex theorising and research history. In order to understand the unique qualities of affordance theory as proposed by James Gibson (1986), it is important to understand how it contrasts with the Gestalt psychology of its predecessors and the sociocultural influences of behaviourism and pragmatism in the United States of America in the 1930s to 1960s compared with the phenomenological traditions influencing Gestaltism in Europe. Suffice to point out that the ontological and epistemological positions underlying these approaches are complex and not always complementary. Hence, the research modalities applied by each are necessarily contrasting. As far as Environmental Psychology, as a discipline is concerned, the shift from early research topics of the spatial-physical type to a more psycho-social, transactional and place oriented types has occurred with changes to the cultural contexts in which all research takes place. The emergence of research into sustainability issues being a case in point. Another example is that of Barker's (1968) behaviour settings as a research agenda evolving, in the context of environmental psychology, into theorising about place and its associated constructs: place identity, place dependency and place attachment.

Perhaps because of this complex skein of roots in the soil of different disciplines, and the perspectives and paradigms within these disciplines, there is an enduring disconnect between the theoretical rhetoric of seminal researchers in environmental psychology and the applied research approach (Bonnes & Secchiaroli, 1995). Authors such as Craik, Ittelson, Proshansky, Rivlin, Altman and Stokols have all espoused to different degrees an ecological and psycho-social view of the problem of the human in environment psychology, which requires a molar approach to research. Despite this, the dominant research modality has been molecular and reductionist (Bonnes & Secchiaroli, 1995). Saegert and Winkel (1990) are of the same view as to the disconnect between theory and applied research. Their analysis of substantive research and theory (p. 442) at the time revealed three main perspectives: the relationship of person and environment as biologically adaptive; the relationship at a scale of individual opportunity structures and finally a view that incorporates both the form of the environment and the activities of individuals and groups into the sociocultural milieu.

While each conception of the environment is seen as a vital contributor to person-environment relationships, the psychological heritage of most researchers leads to a focus on the characteristics and dynamics of persons; and although the field has always offered a contextual critique of psychology (Little 1987), the call for interdisciplinary, systems-oriented, and problem-centred research has not been easy to answer (Saegert & Winkel, 1990, p. 442).

Nearly two decades later, Giuliani and Scopelliti (2009) published their detailed analysis of published research in the two main journals of the field, *Environment & Behavior*, and the *Journal of Environmental Psychology*. They point to entrenched differences among the authors of textbooks on Environmental Psychology as to the defining theories and methodologies of the field. They also determined that 23% or 341 articles of the sample reviewed were "mainly characterised by methodological aspects: namely, the experimental character of the studies...Preferred themes are visual preferences and affective appraisal, environmental cognition and navigation, but also mood and performance related to specific environmental conditions such as light, or reduced stimulation" (Giuliani & Scopelliti, 2009, p. 379). This reinforces Gifford's experience as the editor of the *Journal of Environmental Psychology*:

Transactional approaches to any and all of the problems that environmental psychologists attempt to understand and solve has been suggested for decades, but are rarely employed, at least in studies that have crossed my editorial desk. Why is this? I would suggest that we still lack the analytical tools needed to deal with transactional approaches... we seem to be stumped when it comes to empirical transactional investigations. Thus, a challenging question for the attractive but elusive transactional approach may be how to make it work in everyday empirical research (Gifford, 2009, p. 388)

3.6.2 Environmental Psychology and Educational Contexts

Environmental psychologists have been active in researching school environments from almost the beginning of its emergence as a separate discipline within psychology more broadly (Barker, 1968; Barker & Gump, 1964; Gump, 1978; King & Marans, 1979; Rivlin & Rothenberg, 1976; Rivlin & Wolfe, 1985; Weinstein, 1979). Weinstein (1979) conducted an often cited review of the research that covered over a decade of research into the physical environment of the school up to that time. Lackney (1994) reviewed the research literature from Environmental Psychology and concluded that it had primarily focused on the classroom context and the "Personal/Physical Dimension Interactions" (p. 31). The main topics researched were: seating position, classroom size, classroom furnishing arrangement, spatial density crowding and stress, privacy, noise and acoustics, climate and thermal comfort, windowless classrooms, vandalism, and open classrooms.

The tradition of researching the impacts of the physical environment on teaching and learning continues to current times, with studies on daylighting, noise annoyance, air quality, temperature control, colour and other tangible physical aspects of the environment. There has been however, an increasing awareness of the need to consider mediating factors through an ecological view of school and classroom environments, as the fruitfulness of research of a molecular nature that seeks to isolate certain independent variables of environment and their impact on behaviour, has been ambiguous despite decades of endeavour. As noted elsewhere in this review, the interrelation of variables in natural settings continues to confound findings in studies that seek to isolate independent variables in the environment that impact human behaviour significantly on their own. This was found in studies of the influence of windows and daylighting in schools for instance (Hershong, Wright & Okura, 2000). Given that they are complex systems, any intervention made in one part of an environment will impact on other parts. Isolating any particular variable from the whole would seem problematic.

More than two decades ago, Moore and Lackney (1993) lamented that after more than twenty years of research investigating the possible causal linkages between such variables as “acoustics and noise, lighting, temperature, seating position, classroom furnishing layouts and design, windowlessness, class size and density, school size, and open versus traditional classrooms” (p. 7) there were “limited, ambiguous results” (p. 7). Lackney (1993) attributes the lack of solid evidence one way or the other of the impact of the physical setting on learning outcomes, at that time, to methodological problems relating to how outcomes were measured and the lack of theoretical models to guide researchers and build on previous efforts.

Tanner and Lackney (2006) continued to express concern that educational facilities planners, school boards, architects and others involved in making decisions about school design and construction were not accepting the possibility that design and its associated physical correlates may impact in significant ways on learning outcomes. However, successive reviews of the literature relating to the evidence of the impacts of the physical environment on learning outcomes indicate that the evidence is patchy and ambiguous (Blackmore, Bateman, Loughlin, O’Mara & Aranda, 2011; Higgins, Hall, Wall, Woolner & McCaughey, 2005; Tanner & Lackney, 2006). Fisher (2001) concludes that,

most of what is known about the relationship of school infrastructure to student behaviour and learning outcomes pertains to general conditions and aspects such as lighting, acoustics and temperature control. To the extent that impact on behaviour and outcomes is taken into account in designing school buildings, it is largely theoretical rather than proven relationships which influence design trends and specifications (Final Note, para, 1.).

3.7 Silent Voices

This literature survey has revealed that there has been a growing interest in the field of learning space design, construction, and use, that is partly stimulated by the need to address ageing stocks of educational facilities in developed countries coupled with population growth. There are economic and socio-cultural drivers that are also pushing innovation in this field as the 21st century unfolds and globalisation, the development of knowledge economies, the impact of ICTs on human behaviour and an evolving understanding of how humans learn in a technologically rich environment continue to demand an educational response.

There is also an ongoing interest in how humans are influenced by the natural and built environments in which we are embedded. Schools, being places of special interest in this respect, provide a fertile field for research into how the built environment impacts on the complex processes of learning and the teaching that facilitates it. Though some commentators are questioning the need for schools as they are currently conceived into the future, it is unlikely that developed and developing societies will adopt radically new models of education for the young. Schools are likely to remain sites or places of learning and instruction into the foreseeable future, regardless of how they are designed or what goes on inside them in the service of learning. They will still be inextricably linked, to societal needs for an educated workforce, to carry on the economic activities necessary for survival on a planet with finite natural resources.

The literature and research concerned with learning spaces is trans-disciplinary in nature. The bulk of its yield to date, has been about the impact of the environment on learning and to a lesser degree on teacher attitudes and behaviour. But there is a dearth of research conducted with stakeholders about the design process of learning spaces or about their ongoing use, despite a general call for this to be "embedded in normal practice" (Woolner, et al, 2007, p. 62). Additionally, there is a lack of any coherent theory of, or model for, actual school design research (Gislason, 2009, 2010). Nor is there a robust theory of people-in-environment interaction that is easily applied in empirical studies (Gifford, 2009). The research agendas of the scholars in the various disciplines who have interests in this field are fractured, and a repeated message from those who seek to make sense of it is that it is increasingly difficult to synthesise, and to make confident recommendations for policy and decision makers whose decisions will impact on millions of children's lives over decades of the life of educational facilities (Woolner et al, 2007).

It is most surprising that the review was able to discover only one study that made the decision making behaviour and perspectives, or the lived experience of teachers as managers of learning spaces, the sole focus. Sue Ellen Snow (2002) completed a study involving six secondary school teachers to gain an understanding of "the relationships between classrooms' physical environments and the teachers who work in them" (p. 8). Snow's qualitative study was unusual for this field in that it focused on teachers as they went about their work and interacted with the physical environments of secondary school classrooms. The participants were asked through interviews to reflect on specific aspects of the environment that held meaning for them and influenced their behaviour and experience. Like this review, Snow (2002), commented on the lack of research into the subjective experience of teachers who are required to operate in spaces that they did not design, were not consulted on and have little agency to change in any significant way.

Despite the volume of research that has been conducted to investigate teacher behaviour, there is currently no theory of how primary school teachers go about designing and managing learning spaces as part of the daily flow of their working lives. Teachers have been observed teaching in classrooms to ascertain the impact that classroom design has on secondary school teacher behaviour (Martin, 2002). Teachers have also been assessed in terms of their environmental competence while participating in a study that aimed at increasing teacher awareness of the role played by the environment in influencing both teacher and student behaviour (Lackney, 2008). Teachers have been surveyed and interviewed to better understand how the phenomenon of concern in relation to innovation can undermine the implementation of educational innovations (Cheung, 2002). Konings, Brand-Gruwel and van Merriënboer (2007) used questionnaires to investigate the perceptions of secondary school teachers across five sites, in relation to a Dutch learning environment design innovation program and concluded that the limited success of the initiative could be enhanced by better cooperation between designers and teachers. Teachers have been researched to determine how they conceptualise the act of teaching itself (Eley, 2006). But even in this fundamental area, research methods fail to ask teachers about "what they did in a particular concrete instance, on a particular day, with a specified group of students" (Eley, 2006, p. 192).

In broad terms the research conducted pertaining to teachers and learning spaces, is descriptive and correlational and often yields a set of recommendations for practitioners, policy makers or designers, but it fails to explain teacher behaviour or

develop theory about this. Given the centrality of teacher behaviour in the success of the educational enterprise it is surprising that more effort has not been put into this task. This is especially so in the light of comments such as this one made in an OECD (2002) document introducing neuroscience to education.

"The high hopes of those advanced societies who established in the 19th century universal, compulsory, free, elementary education for their peoples have not been fully realised. Instead, as so many young people tell us that they hate school, they fail to learn the basics of literacy and numeracy to enable them to become employable; and they disrupt classes, or play truant, or practice intellectual truancy" (OECD, 2002, p. 17).

Understanding how teachers perceive themselves as contributing, or not, to this situation would be worthy of study and developing theories that are grounded in teacher experience would help to generate a research base from which verificational work could spring. The same applies to the issue of the complex interrelation of variables that are found in the person-in-environment transactions of the classroom or its contemporary equivalent, the learning space.

Lackney (1994) reviewed a number of existing conceptual frameworks from education, psychology and architecture theory, in an endeavour to synthesise them into one that built "on a comprehensive understanding of the school environment as an ecological system of interrelated dimensions" (p. 91). Lackney's, *Multidimensional Model of Educational Environments* addresses some of the issues raised earlier in the review where researchers find themselves confounded by the interrelationships of variables that are seemingly unable to be teased apart sufficiently to afford confidence in the findings. The MMEE proposes that, the interactional and ecological nature of the educational environment requires a theoretical framework to guide research and practice, as well as assist researchers and practitioners from different disciplines to work together using a common language and understanding of the complexity of the environments they operate in. In reference to the possibility for the use of the MMEE in practice-based research Lackney makes the following point.

"The creating of a theoretical framework for understanding educational environments has been born out of necessity: educational planners, architectural designers, and facility managers have, for too long, operated without full knowledge regarding the creation of an ecological educational environment which meets the needs of all its constituencies simultaneously" (Lackney, 1994, p. 96).

Despite the promise of the MMEE, I have not been able to find any reference to it in the literature beyond the original source. One is left to wonder what barriers its proponents experienced in its application in the field.

It is clear from this review that the voice of teachers is relatively silent when compared to those of researchers from many disciplines who create a discourse of learning space design, implementation and review. The main narratives of this discourse rarely include those created by teachers themselves, as the professionals who are expected to engage with preconceived and constructed spaces, populated with children who are also equally silent about the impact the spaces have on them. Teachers are required to occupy spaces, still largely designed in the industrial style, with Fordist epistemologies built into the very fabric of the construction. They address 21st century demands on curriculum, pedagogy and assessment, without

having any opportunity as to how the space can be utilised as is, or refurbished to cope with these demands. Examples of excellence in both the processes of consultation around learning space design, the design principles, construction and occupation are emerging in the literature with the recent injection of substantial funding by Australian and International governments. However, these exemplars are far from the reality for most teachers and their students. A fear emerging from this review is the possibility of learning space ghettos arising from a lack of opportunity for some communities to access the resources they need to bring their existing facilities into the 21st century learning space milieu. Distribution of resources across societies is rarely even and decisions made by some ill-informed school principals or communities may have long lasting and negative impacts on the capacity of teachers to respond with their students, to the learning agendas of the future, if not the present.

The research reviewed for this study indicates that commentators and decision makers are drawing from research findings that are quite dated. Caution is required to investigate the value of these studies for the contemporary contexts of educational theory and practice. It is easy and convenient for vested interests to cherry pick findings to support whatever perspective they are using to inform their decisions. This situation is compounded by a lack of theoretical frameworks to guide research in a way that some cohesive agendas might emerge, and attract the types of support, financial and otherwise, needed to ensure that the best built environments possible are constructed with broad and non-tokenistic consultation processes included as a matter of course. Failure to seek the end user perspective of design brings with it many negative consequences. "The history of school building programs (Woolner et al., 2005) warns us that the interactive whiteboard and the atrium could be the typing suites and flat roofs of the middle-decades of the 21st century" (Woolner et al., 2007, p. 63).

Given the ambiguity and the lack of theoretical frameworks to guide researchers and practitioners at this point in time, despite the persuasive rhetoric that exists, grounded theory studies such as the one undertaken in this dissertation have potential to make a solid contribution to the field. The main benefit of the grounded theory approach in this study is its emphasis on conceptualizing from rich data that is collected directly from participants who live and operate in the research context. This focus on conceptualizing, through what is essentially a process of pattern analysis avoids getting trapped in a spiral of qualitative data description that doesn't help the researcher to work towards the generation of a theory to account for the ways that participants behave in context. Additionally, the method involves the researcher in the process of analysis from the very beginning of data collection and also through the application of the dictum, "All is data" (Glaser, 2002, para. 1), so that theory building is a process that evolves throughout the life of the study. It is not left to a conclusion at the end. This means that the reader can see the process by which the theory is developed by the research. This is important given the inductive nature of the grounded theory approach.

Chapter 4: Methodology

This chapter deals with a description and a justification for the methodology applied in this study. An introduction and an orientation to the methodology are provided before dealing with specific issues of researcher reflexivity, sampling and recruitment of participants, ethical clearance and issues, data collection, the coding and memoing processes, the relationship of extant literature and theory to the study, and credibility issues. Chapter 4 elaborates on the overview of methodological influences provided in Chapter 2 (Conceptual Framework).

4.1 Introduction and orientation

Research is systematic inquiry into a phenomenon that improves our collective or profession specific knowledge and understanding of it. It is a creative process in that it yields new information, theories or explanations, or confirms, modifies or disconfirms, existing theories about phenomena. Reber and Reber (2001) in their “Penguin Dictionary of Psychology” refer to a sociological definition of research as being, “any honest attempt to study a problem systematically or to add to our knowledge...” (p.626). The former Australian Commonwealth government defined research through the Australian code for for the responsible conduct of research as:

original investigation undertaken to gain knowledge, understanding and insight, and includes work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction.

(National Health and Medical Research Council, Australian Research Council, & Universities Australia, 2007, p. 1).

The research endeavor undertaken in this study of how teachers go about designing, maintaining and managing learning spaces to serve the learning of primary school children is my honest and systematic attempt to explore this substantive field, and to generate a substantive theory related to my analysis of the relevant data.

An inquiry can be undertaken using a variety of methods that are matched to the purpose of the investigation and the anticipated yield. As indicated by the previous chapter’s survey of extant literature relevant to this study, there is currently no substantive theory that attempts to explain the psycho-social dimensions of how primary school teachers go about designing, managing and maintaining the learning spaces they are embedded in as part of their daily working lives. Despite the voluminous literature, advising teachers on how they should go about the daily tasks involved in occupying spaces for teaching and learning, little is known about teacher perspectives on this. The implications of not engaging with teachers in times of rapid change and decision making about the design of learning spaces have historically been demonstrated to be resistance. We are currently in a period of increasing demands being placed on teachers to address agendas of change in educational theory, and practice, and the spaces in which teachers are required to work, that is, deliver their professional services, are being transformed accordingly. In many

instances, despite these demands, and the transformations of sites in some districts, many schools remain essentially unchanged in design, and there is a disconnect between the rhetoric of change and the investments being made in teacher training on the one hand, and site restructuring on the other. A better understanding of teacher experience and behaviour through the development of substantive theory could be of significant assistance to educational facilities planners, teachers and ultimately learners. To this end, a qualitative, grounded theory methodology was adopted for this study.

4.2 Qualitative Research in Psychology

Qualitative research in psychology is emerging as a valued source of theory and explanation for the types of questions that psychology as a discipline concerns itself with (Auerbach & Silverstein, 2003; Camic, Rhodes, & Yardley, 2003; Camic et al., 2003; Frosh & Young, 2008; Frost, 2011; Lyons & Coyle, 2007; Willig, 2008). Qualitative methods of research are often contrasted with the hypothetico-deductive approaches mostly applied in scientific research, and considered as the ‘gold standard’. The hypothetico-deductive research approach is hypothesis testing. This study is hypothesis generating and reflects the view that a substantive theory is a set of hypotheses that can be subjected to later verificational research. The theory is generated through inductive analysis of rich qualitative data gathered in the main, directly from people who are engaged in the field under investigation and who are considered the best sources of information that, once subjected to a process of analysis can account for the main concerns they have in the field and how they resolve these concerns.

Qualitative research methodology in this study is supported by the use of grounded theory methods to generate a substantive theory. Methodology refers to the general approach to research and is closely tied to the researcher’s epistemological attitudes, whereas methods are those strategies used by the researcher to gather and analyse information, and generate descriptions, accounts and theories (Willig, 2008).

The methodology used in a research project such as this one is not just a matter of personal preference or predilection. The methodology needs to suit the research issue at hand. I demonstrated in Chapter 3 that as far as the phenomenon of primary teachers designing and managing learning spaces as part of their daily work experience is concerned, I have not been able to find any specific substantive theory to account for teacher behaviour in context, as part of their daily workflow relating to the design, management and maintenance of learning space. This being the case, a research methodology that better suits the process of theory building from the ‘ground up’ is preferable. Qualitative research methodology can achieve this objective.

Before the specific methods applied in this study are discussed, a definition of qualitative research methodology is required. Denzin and Lincoln (2005, p. 3) offer a definition that is qualified by their rendering of the complex history of debates and interpretations that have seen qualitative research methodology fracture into many schools:

Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turned the world into a series of representations, including field notes, interviews,

conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them.

The use of qualitative research methodology for this study enabled me to engage with teachers who were engaging in the design, maintenance and management of learning spaces on a daily basis. The participants were reflecting on their own behaviour, thoughts and feelings as opposed to those of others. They engaged in “material practices that make the world visible” (Denzin & Lincoln, 2005, p. 3).

Qualitative research is not a homogenous set of practices. Many methods have been developed that all broadly fit into the qualitative rubric. Discourse analysis, critical ethnography, case study, phenomenology, and auto-ethnography all use qualitative methodology as a foundation but have very particular ways of doing the research and indeed, addressing particular kinds of research questions.

This inquiry represents a hypothesis generating study (Auerbach & Silverstein, 2003) that explores how a group of primary school teachers manage learning spaces, as they go about aspects of the daily business of their work. The study uses qualitative data in the form of photographs taken by the participants and in-depth interviews using the reflexive photo elicitation method, to generate theory in the form of hypotheses based on patterns perceived by the researcher, in the data. In broad terms it is an example of qualitative research. For the purposes of this study, in addition to that offered above by Denzin and Lincoln (2005), the definition of qualitative research provided by Auerbach and Silverstein (2003) was adopted. “Qualitative research is research that involves analysing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon.” (p. 3) The yield of this process is a theory or set of hypotheses. Auerbach and Silverstein (2003) define a theory as “...a description of a pattern that you find in the data.” (p. 32)

Willig (2008) makes a distinction between small q and big Q qualitative research by citing Kidder and Fine (1987) who refer to big Q qualitative research as being inductive, theory generating and meaning oriented research. Little q research on the other hand, uses “...incorporation of non-numerical data collection techniques into hypothetico-deductive research designs” (Willig, 2008, p. 9). This study is an example of ‘big Q’ research that uses qualitative data to explore the meanings that the research participants report, as they subjectively reflect on their daily management of learning spaces in rural primary schools in Queensland, Australia.

4.3 Grounded Theory and Grounded Theory Methods

In more specific terms this study applies the hypothesis-generating methods of the ‘grounded theory’ type. Glaser (1992, p.16) defines the grounded theory approach as being:

a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area. The research product constitutes a theoretical formulation or integrated set of concepts or hypotheses about the substantive area under study. That is all. The yield is just hypotheses!

Since its discovery by Glaser and Strauss (1967), the grounded theory approach to qualitative research has undergone a number of modifications that have been influenced by the epistemological positions of their advocates, and as a result of variations on the initial method being trialed in many settings. “GTM [grounded theory methodology] is currently the most widely used and popular qualitative research method across a wide range of disciplines and subject areas” (Bryant & Charmaz, 2010, p. 1).

Glaser (2011) defines the central purpose of a doing a grounded theory study to be the discovery of latent patterns that exist in the data collected for analysis. These latent patterns represent the ‘main concern’ of participants in a substantive field as they go about acting in this field. Further patterns in the data will indicate, in concert with the conceptualisation process of the researcher, the main social, social structural, or psychological ways that participants resolve this main concern. As the conceptualisation process proceeds through the application of the ‘constant comparative method’ of analysis, “The product, a GT [grounded theory], will be an abstraction from time, place and people, that frees the researcher from the tyranny of norm distortion by humans trying to get an accurate description to solve the worrisome accuracy problem” (Glaser, 2001, p. 11).

This study explores the subjective experiences and reflections of participants engaging in sustained action in a substantive field, and generates a theory of action, that describes the complexity of the participants’ experiences and the person-in-environment milieu that is negotiated in order to achieve the participants’ goals in that milieu. The result or yield of this inquiry is proposed as a grounded theory. The definition of grounded theory adopted for application in this study is drawn from Bryant and Charmaz (2007, p. 608):

Grounded theory is a method of conducting qualitative research that focuses on creating conceptual frameworks or theories through building inductive analysis from the data. Hence, the analytic categories are directly grounded in the data.

The method is distinctive in a number of ways from other qualitative research in that it focuses on developing new theories from rich data rather than applying extant theories. It also involves the simultaneous collection and analysis of the data through constant comparison and over the life of the project. Further, it uses inductive reasoning by a theoretically sensitive researcher to conceptualise through analysis rather than to describe (Bryant & Charmaz, 2007; Charmaz, 2006; Glaser, 1978, 2001, 2011).

It is useful to make clear the distinction between a grounded theory and grounded theory methods as this is unclear in the definition offered by Bryant and Charmaz (2010). The final yield of an inquiry can be a grounded theory. This is in the form of a set of hypotheses. “Grounded theory is not findings, but rather is an integrated set of conceptual hypotheses. It is just probability statements about the relationship between concepts” (Glaser, 1998, p. 3). Grounded theory methods are used to generate grounded theory. These methods are seen by researchers engaged in classic or Glaserian grounded theory generation as being essential to the methodological package and include, theoretical sampling, substantive and theoretical coding, memoing, and the constant comparative method.

Charmaz, (2006) offers an alternative view to the Glaserian approach though the methods used are essentially the same. By constructing grounded theory methods as "...systematic, yet flexible guidelines for collecting and analysing qualitative data...The guidelines offer a set of general principles and heuristic devices rather than formulaic rules" (p.2). Charmaz places less emphasis on subscription to a formulaic and rigidly applied set of methods for conducting the research process. Further, Charmaz (2006) refers to the yield of an inquiry conducted using grounded theory methods as being "...an abstract theoretical understanding of the studied experience" (p. 4) as opposed to an explanation of the main concerns of the participants and the psycho-social processes they use to resolve those concerns as is proposed by the classic approach.

This study endorses a more liberal interpretation of grounded theory and grounded theory methodology than that advocated for by classic grounded theory researchers. Not because the researcher believes that the classic form is somehow flawed, but because of the better fit and relevance of the adopted methods to achieve the research aims particular to this study. The use of grounded theory methods in qualitative research projects is not new. Lincoln and Guba (1985) in their seminal work, *Naturalistic Inquiry* provide an in-depth description of the use of the constant comparison method as developed by Glaser and Strauss (1967), to qualitative studies more broadly.

Grounded theory methods have been applied in this study, to analyse data and engage in the conceptualising process, required to perceive and name patterns presented by the data, and to theoretically integrate the data with researcher constructed interpretations of existing theoretical propositions. The source of these theoretical propositions have in the main been derived, but not exclusively, from the disciplines known as environmental psychology, ecological psychology and humanistic geography. Grounded theory methods including, the collection of rich data in context, coding, memoing and the constant comparison method of analysis, have been applied to generate a substantive theory to explain primary school teacher behaviour in the design, management and maintenance of learning spaces. Additionally, I have applied Glaser's (2011) primary purpose of a grounded theory study as being to determine the main concern of participants in a study and how they resolve this concern. This is expressed as a theory that invites further research of a verificational nature.

While I have made some accommodations in the application of Glaserian grounded theory by adopting a constructivist attitude in the analysis of data, I have maintained the core purpose of Glaserian grounded theory (Glaser, 2011). My interpretivist approach is consistent with the foundations that I outlined in Chapter 2. Hence, throughout the analysis of the data used for the study, I refer to the generation of codes, categories, and concepts through my discernment of patterns constructed from my application of the constant comparative approach.

The research design graphic from Chapter 2 is replicated below to represent the methodology in the context of the study as a whole.

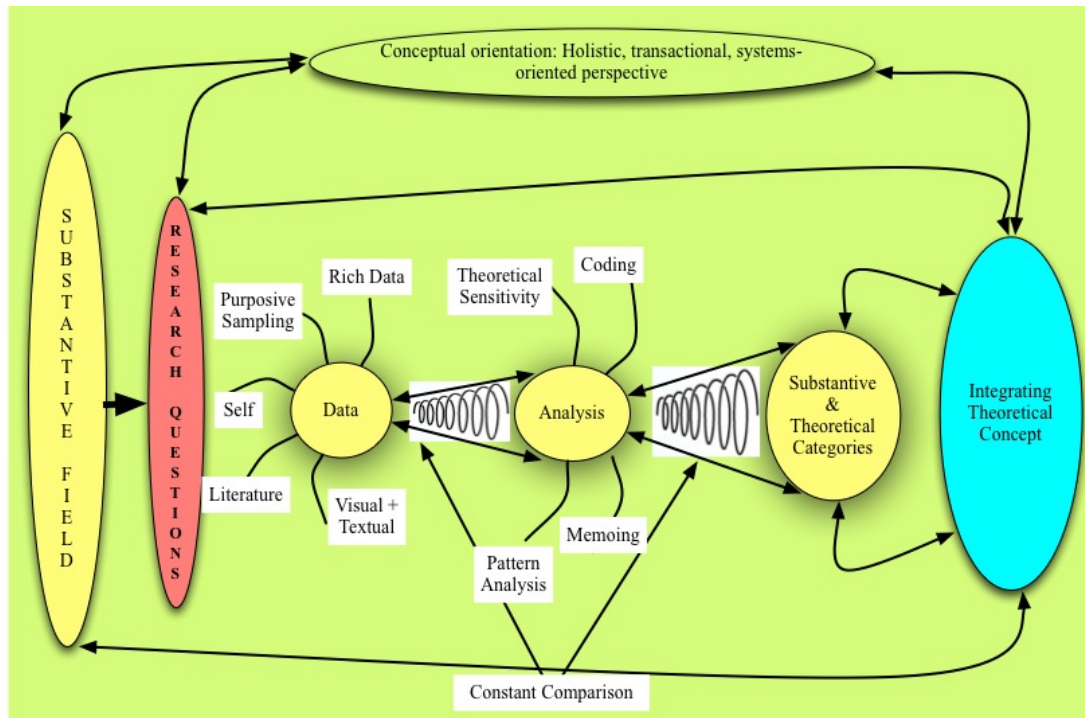


Figure 4-1 Schematic diagram of research design

4.3.1 Grounded Theory Analysis

Grounded theory analysis is essentially inductive and builds increasingly abstract and inclusive categories from patterns perceived by the researcher through the application of the constant comparative process. The focus through out the process is on how participants resolve their main concern in relation to the substantive field. As such a grounded theory is concerned with basic psychosocial processes that are evident in the ways that people resolve concerns in their daily lives. The analytical process favours conceptualization over description and builds a theory that transcends people, places and time. The analytical process is not judgmental. It doesn't make recommendations on what is the best or the worst way to approach a main concern and resolve it. It is concerned with building theory that indicates what is going on in a particular substantive field in terms of psychosocial processes.

At the heart of the analytical approach in grounded theory is the process of constant comparison. Bryant and Charmaz (2010) define the process as being, "a method of analysis that generates successively more abstract concepts and theories through inductive processes of comparing data with data, data with category, category with category and category with concept. Comparisons then constitute each stage of analytic development" (p. 607). This process of generating successively more abstract concepts is graphically represented in Chapter 6 (Figures 6-1, 6-2, 6-3, 6-4).

4.4 Researcher Reflexivity

Qualitative researchers are urged to be mindful of, and to make explicit to their audiences, their personal and analytical biases, positions, and evolving understanding of the research process, the study to hand, and the ethical implications

involved (Auerbach & Silverstein, 2003; Frosh & Young, 2008; Gilgun, 2010; Lichtman, 2011; Lincoln & Guba, 1985; Lyons & Coyle, 2007; Willig, 2008). The reflective process is crucial in ensuring that the researcher is continually striving for consciousness of how their personal and professional proclivities may be influencing the research process. The concept applies at all stages of the research process, not merely the data analysis phase. Settling on a substantive field to research, articulating research questions, deciding on a particular research methodology, deciding whom to involve and how in data collection, conducting the data analysis process, even deciding on what is considered data, all involve reflexivity on the part of the researcher.

Lyons and Coyle (2007, p. 18) cautions against

...a tokenistic engagement with this, where researchers present a mini-biography and fail to identify which aspects of their speaking position were salient in their research and in what ways these commitments influenced the research process and the research product (to the extent that this is available to the researcher's conscious awareness).

Gilgun (2010) makes the point that reflexivity is a two way process in that it requires the researcher to be both aware of the impact of the ways they influence the research process and the ways in which they are influenced by the research process itself. Furthermore, she alerts researchers that the audience they write for is also an influence on the research process and the researcher. As a researcher completing a doctoral thesis in the field of environmental psychology I am particularly aware of this issue from a number of perspectives.

As a primary school teacher, small school principal, guidance officer, family therapist and tertiary educator, I have engaged in an enduring process of formal and informal study of matters related to learning and the various influences that impair or enhance it from a bio-psycho-social perspective. I have completed formal postgraduate studies in psychology, however this related to the very specific field of psychotherapy. My Master of Education (Guidance & Counselling) also introduced me to subjects usually studied in psychology undergraduate programs, such as introductory and advanced counselling and psychometric assessment. I continue to teach in the Master of Education program at the University of Southern Queensland in these same areas in addition to courses in mental health promotion in schools and curriculum and pedagogy. I do not come to this current research as a complete novice, however, I have never researched nor published any academic papers in the field of environmental psychology before and this does make me acutely aware of the audience aspect of this particular research project.

An additional aspect of this audience awareness relates to the research paradigm I have chosen. Though the use of qualitative research methodology in psychology is growing in status it is still an infant compared to the use of quantitative methodology (Auerbach & Silverstein, 2003; Lyons & Coyle, 2007; Willig, 2008). Indeed, the use of qualitative methodology brings with it a questioning of the ontological, epistemological and axiological foundations of scientific research to a degree. This is so at least in the sense of justifying the application of the qualitative paradigm in the study as opposed to using a more traditional hypothetico-deductive and quantitative approach. My awareness of this issue motivates me to consider deeply how knowledge is constructed in the field of environmental psychology and more generally and just how robust might be the claims I can make

about the outcomes of my study. This questioning extends to my reading of psychological and other theory as well. My reading in the field of grounded theory has particularly heightened my sensitivity to how hypothetical constructs in psychology and other disciplines have traditionally been developed and how they can be easily reified into capital 'T' truths regardless of the 'ungrounded' nature of their conception and development. There is a degree of psychic discomfort that comes with this process. One way to resolve this is through the research endeavor itself. Through consciously applying reflexivity throughout the study, rather than making an opening statement about it and then relegating it to the conclusion of the thesis or worse still not addressing it again at all. My intention is to use reflexivity as a tool to help in the hypothesis generating process of the research.

As mentioned above, my professional career spans over thirty years in the field of education with twenty-two of those being in school based positions. I have personally practiced as a primary teacher in six schools, three of these as teaching principal. As an advisory teacher for students with intellectual impairment and guidance officer, I visited scores of schools throughout Far North Queensland and the Maranoa (South West Region) and the Darling Downs. Rural schools have been the backbone of my professional development and so choosing a field of study that includes only sites from rural areas, though initially it seemed serendipitous, perhaps was more than that. In any case, I have not come to the study with the limited preconceptions that are advised by grounded theorists of the Glaserian school. Constructivist grounded theorists are more forgiving in this respect owing to the epistemological positioning they take and to the inclusion of reflexivity as an issue for ongoing researcher awareness (Mruck & Mey, 2010).

A final comment in relation to reflexivity relates to the pragmatic issues of the forms it takes. Awareness of one's values, beliefs and habits of mind is one aspect of reflexivity and has been described as positional reflexivity (Macbeth, as cited in Lichtman, 2001, p. 288). Positional reflexivity is concerned with

...those formulations of the reflexive exercise that treat it as a self-referential analytic exercise. A 'positionally reflexive' view of the field thus implicates a disciplined view and articulation of one's analytically situated self, and for some researchers...positional reflexivity has directly autobiographical and sometimes nearly clinical attachments (Macbeth, as cited in Lichtman, 2011, p. 288).

Positional reflexivity deals with subjectivity that in positivist quantitative research is something to be guarded against and as far as possible controlled. In the qualitative, post-positivist approach, subjectivity can be a source of data to assist in a study (Auerbach & Silverstein, 2003). My experience as a teacher in a range of settings has provided me with a considerable experiential base from which to draw when accessing literature on the substantive field and when interviewing participants. For instance, I found myself in interviewing participants easily reflecting back content and affect by actively listening to them. I consciously applied the micro-skills of counselling that I teach and have practiced for many years. The purpose was not counselling of course, it was listening. I also found myself recalling the many classrooms that I had either worked in myself or had visited over the years and saw patterns emerging that related both to the classroom design and those teachers who designed them. Phenomenologists use the practice of bracketing in order to differentiate psychologically between the researcher's material and that of the study participants. Psychotherapists use the same type of process when doing

therapy. I found myself also bracketing these images but also noting them as possible sources of data for analysis.

A second type of reflexivity is known as textual reflexivity (Macbeth, 2001). This type of reflexivity challenges the realist interpretation of text (in all its forms) as being representational. Macbeth (2001) cites Latour (1988) “I use ‘reflexive’ to denote any text that takes into account its own production and which, by doing so, claims to undo the deleterious effects upon its readers of being believed too little or too much” (p. 166). The challenge of reflexive text generation is to avoid the psychologist’s fallacy (James, 2007) and to remind oneself and one’s audience that the analysis of data, the product of the analysis and indeed the data itself cannot be considered an authentic representation of the real. Heft (2001, p. 115) interprets this as follows:

This fallacy entails a “confusion of his (i.e., the psychologist’s) own standpoint with that of the mental fact about which he is making his report” (James, 1890/1981, p.195). By this James meant that there is a difference between immediate psychological experience as such and an analytical description of the experience, which is at a remove from it. Being a description at least once removed from phenomena, “the psychologist’s standpoint” has a transforming effect on a description of the immediate phenomenon by virtue of what the psychologist brings to immediate experience. As a result, what may be described as a basic data may be in actuality a highly intellectualized abstraction.

Symbolic Interactionism offers a source of relief to the dissonance that the rhetorical wrestle (Glaser, 1998) engaged in here with reflexivity, inevitably gives rise to. Symbolic interactionism has its philosophical roots in pragmatism which was developed through the work of William James, John Dewey, Charles Peirce and William Thomas throughout the 19th and 20th centuries (Charon, 2010). Charon (2010, pp. 30-31) outlines four main ideas espoused by pragmatism as a philosophy. These ideas are all related to how humans interact with their environments to make sense of those environments and to engage with them through action. They can be summarised as a perspective that views humans as active agents in social and physical contexts, constantly filtering the believability of elements of the environment on the basis of how useful these elements are in the life of the individual. Further, the proper unit of analysis in studying human behaviour is action, not psychological traits, personality or other constructs used to define the qualities of an individual.

These ideas from pragmatism inform the symbolic interactionist idea that humans are best viewed through the lens of perspectives and reference groups as opposed to attitudes and social influence (Charon, 2010, p. 38). The implications for reflexivity that follow from this position are that in being aware of ourselves as researchers and of our participants as subjects of study, we need to understand that we all come to any context with a range of perspectives and that these can change in context. They are not reified and deterministic. Referring to the example of jurors being elected to serve at a trial, Charon (2010) asserts,

Knowing the attitude an individual may have upon being chosen to serve, according to symbolic interactionism, will give us much less information as to how the jury member will vote than knowing how the person’s perspective may change during the trial... The human being interacts, users

perspectives, therefore defines situations, acts according to what goes on in the present situation, and is active not passive. The actor is perceived to be constantly changing actions as he or she goes along (p. 32).

If this is the case, according to the symbolic interactionist perspective, the research process involves the researcher in acting according to the perspectives he/she holds upon entering the process, but should also account for the possibility that these perspectives may change during or as a result of the process itself. This is also true for the participants in this research. The data collected are temporally bounded and the perspectives of participants are not to be considered unchangeable. They are not realist representations of 'Truth' nor is the yield of any analysis a realist representation of 'Truth'. Charon's (2010) summary statement on symbolic interactionism as a perspective speaks not only to this issue of reflexivity but also to the issue of humans in the context of environment more broadly:

To the symbolic interactionist, we do not simply respond to our environment, but we define, act toward it, and use it. We are not simply shaped, conditioned, controlled by that environment (including other humans), but we act toward it according to our ongoing definitions arising from perspectives that are themselves, dynamic (p. 41).

4.5 Sampling and Recruitment of Participants

Following the qualitative and grounded theory methods principle that the research participants should be actively engaged in the substantive field of the investigation, I recruited primary school teachers who were currently teaching on a full time or part time basis in Queensland primary schools. One exception to this sample was the inclusion of one special education teacher who conducted a special education class in a primary school, but who also worked as an advisory teacher to other teachers in that school on matters relating to the inclusion of student with disabling conditions. Another exception was the inclusion of one primary school principal who was involved in overseeing the refurbishment of learning spaces in her school and who had a sincere and longstanding interest in the role that physical environments had in influencing teacher and student behaviour. The sampling for this study was thus, purposive, not convenience, or probability sampling (Maxwell, 2005).

Grounded theory methods typically regard the sampling process as an ongoing one throughout the life of the project as opposed to a static initial sampling that gives rise to data collection and analysis. Grounded theory methods encourage initial purposive sampling with immediate and ongoing data collection and analysis taking place through the application of the constant comparative process. Sampling is therefore guided by data analysis. It has been described by Glaser (1978) as theoretical sampling as the process of sampling is emergent with theoretical questions that, themselves emerge as part of the analytical process. Throughout the study, the participants sought out for inclusion were purposively recruited, not randomly sampled from a supposed typical population. Sampling also included seeking out data that might contradict the emerging theory. Negative cases are an important source of information for theory builders (Payne, 2007).

For this study, following the ethical clearance process at the university and the state and Catholic education department levels, I sought support for the research by

emailing all of the principals of state schools in the Darling Downs District of the state education department. (189 school principals were contacted by email.) I was surprised that I received no return emails from this approach. I then used personal contacts to approach four schools, two State and one Catholic, and sought to present to the staff at these schools in order to recruit participants. Two principals gave me permission to make a presentation to the staff at their schools. However, no participants were recruited. The other two schools did not give me permission to present to staff but took the information sheet I had prepared for distribution to staff. Again, no participants came forward from this approach.

Following my initial failures to recruit participants I approached a fourth school near to my home and where my three daughters had attended primary school. I did not know the current principal personally, but did know a number of teachers working there. I was given permission to approach the teachers at this school and two subsequently agreed to participate. One was a preparatory / year one teacher and the other was teaching year three. Data collection began with these two teachers.

I subsequently approached a Master of Education student from my university who I knew was teaching fulltime in a primary school and after clearing her participation with the principal of this school commenced the research process with her. I now had three participants.

I approached another primary school seeking participants but was again refused access to the staff on the basis that they “were too busy”. The Deputy Principal of that school suggested that I speak with the principal of another school in a rural centre approximately one hundred and fifty kilometres from my location as she was aware that refurbishment of this school was currently being undertaken. After following this suggestion I recruited five staff and the principal of the school. This snowballing technique proved successful where cold calling large numbers of schools did not. At this point I now had nine participants across three very different sites. All the sites were rural primary schools.

I was able to interview participants and begin analysis of the data as they were collected with the constraint that I am employed in a full time teaching academic position in an understaffed university faculty. I felt that I needed more participants to gain the variance of perspectives that would allow for robust patterns to emerge from the data so I continued to canvass for additional prospects. I was referred by a colleague to a further two teachers who worked together team teaching a year six and seven class at a larger rural school, and after following this up they agreed to participate. After substantial analysis of the data received from these initial eleven participants I approached another principal of a rural school who allowed me to make a presentation to his staff, and following this, five of them agreed to participate. This group of five teachers was included to help me determine if the patterns I saw emerging from the data were reliable. I was also interested to see if any negative cases of emergent patterns could be discovered. (See Appendix 1 for a basic profile of sites and participants.)

Site	Profile	Participants
School A	Approx. 190 students Prep to Year 7. Eleven full-time class teachers. Rural school situated 25km from Regional Centre of approx 90000 people.	P1
		P2
School B	Rural school approx. 30km from Regional Centre of approx 90000 people. Student enrolment Approx 50 - P-7 Two class groups – P-3 and 4-7.	P3
		P4
School C	Rural school situated 142km from Regional Centre of approx. 90000 people. Enrolment approx. 360 P-7 classes Recent refurbishment of several classrooms for upper school. Refurbishment of ICT services ongoing. New Library in construction. New sports and general activities centre completed.	P5
		P6
		P7
		P8
		P9
School D	Rural school 60km from regional centre of approx. 90000 people. Near to main highway West of the State capital. P-7 classes with enrolment of approx. 600. Mixture of high set weather board buildings with demountable classrooms.	P10
		P11
School E	Rural P-7 school 45km from regional centre. Mixed high set original weatherboard buildings and low set demountable buildings. A new detached library had recently been completed.	P12
		P13
		P14
		P15
		P16

Table 4-1 Summary of participants and sites

4.6 Ethical Clearance and Issues

Ethics in research can be seen as a formal process of accountability required by the university or the organisations that participants are employed by. It is also about researcher attitude. In my professional life I apply the Bioethical Framework as a general guide to behaviour and problem solving (Johnstone, 2009). This framework includes four elements: non-maleficence; beneficence; autonomy and justice. I include an additional element in my application - fidelity, which deals with issues of confidentiality and more broadly with an attitude of faithfulness or trustworthiness.

Ethical clearance to conduct this study was provided by the University of Southern Queensland Ethics Committee (H09REA009) prior to any participants being recruited. Appendix 2 contains copies of all the relevant documents provided to participants including a description of the study, an invitation to participate in the study, a teacher consent form, a parent consent form should any photos of children be included, informed consent guidelines, an abstract of the study, a covering letter to participants and a participant checklist form for convenience. Participant consent forms included the contact details of the Principal Supervisor for the study and the

then Office of Research and Higher Degrees at the University of Southern Queensland.

Ethical clearance to conduct the study by recruiting teaching staff from the Department of Education in the State of Queensland was also secured prior to contacting any schools or possible participants. Only Department of Education teachers formally participated in this study. The term 'formally' is used as I had many 'informal' conversations with teachers, academics, principals, architects and educational facilities planners throughout the life of the study that contributed ideas or sparked new avenues of inquiry for me.

One ethical issue that arose in this study on two occasions involved the principals of two schools seeking information or feedback on how their teachers were performing in relation to the topic. Though both of these principals were very interested in the research process I developed the feeling that in one case, their support was somewhat coloured by the opportunity to gather information about staff that only an 'outsider' might be able to do. This principal asked in a straightforward manner for an evaluation of how the staff at that school were performing in relation to the management of learning spaces. The principal wanted to know if they were intentionally aware of the issues involved and making the best use of what they had. I had to respond that I was not able to evaluate participants' performance. I gave the principal some general feedback from my research overall on some of the issues that were emerging. This seemed to satisfy the principal and the issue of staff performance was not pursued further.

The second principal had been through an extensive process of professional development with staff during an extensive refurbishment of old classrooms. I had lengthy conversations with this principal about the process and about the issues of the influence of spatial elements on teaching and learning. This principal was also keen to know about how the staff involved were coping and how they saw the impact of the refurbishments on teaching and learning. In this case, I sensed that the principal was more looking for confirmation of personal evaluations. Again, I stuck to general issues emerging from the study and from my literature reviews. I also fell back on asking more questions about the process which seemed again, to avoid my being pursued for specific information about the participants' actual responses in my interviews and any opinion or evaluation I may have made as a result.

I do not think it is unusual for organizational leaders to want to get information from researchers that might help them to gain insights into staff or to get information that might help them to identify needs for action in a research area. In my case, I wanted to ensure that the confidentiality of my research participants was protected while at the same time, ensuring that I would have continued support and access from the principals concerned.

4.7 Data Collection

This study is concerned with exploring and understanding how primary school teachers manage learning spaces as part of their daily workflow. The understanding afforded by the researcher interacting with participants, collecting rich, purposeful, focused and relevant data, along with the application of grounded theory methods of analysis, has yielded a theory accounting for the complex behaviours that teachers themselves report as being representative of their management of learning spaces. A

theory in this context is defined as a set of hypotheses that can then be subjected to verification research of different types.

The research purpose determines what types of data are required to provide the raw material for analysis and theory building. The methodology adopted for the research also determines what the nature of the data will be. Any substantive field can be studied from many different perspectives. When using grounded theory methods, data collection and analysis occur simultaneously as analysis begins with the first encounter with participants and continues through to the write up of the theory. Charmaz, (2006, pp. 14-15) uses the metaphor of photography in describing the flexibility afforded to data collection by the methodology. Data collection is likened to changing lenses on a camera to gain different perspectives on the same scene.

I began my broad sweep of the landscape by applying reflexive photo-elicited interviewing, as the primary method for generating participant engagement with the research topic, and to provide a non-threatening process that afforded participants control over the content of the interviews.

4.7.1 Photo-elicited Interviewing

Photo-elicited interview techniques take a variety of forms (Hurworth, Clark, Martin, & Thomsen, 2005; Hurworth, 2003). I applied the technique of 'reflexive photo' interviewing in which participants were asked to take photos of whatever they considered to be 'learning spaces', that they were required to design, manage or maintain as part of their everyday workflow as primary school teachers. I offered to provide disposable cameras to all participants however, as teachers in schools today usually have access to digital cameras, all participants elected to use their own or the school's. I provided USB drives to all participants so that they could transfer their photographs from their digital cameras to the drives. Participants then posted the USB drives to me at my cost or I collected them in person. Once I had the USB drives I was able to print colour hard copies of the files from each participant for use in the interviewing process.

I used the reflexive photo interviewing technique (also referred to as participatory photo interviewing) in order to overcome some of the limitations that I see in traditional oral, in-depth interviewing techniques. I was very conscious of wanting to empower the participants in the study and give them a sense of ownership and control over the interview process. I was also hoping that through participatory photo interviewing, the participants would be more likely to reveal what they considered to be important to them in relation to the topic, rather than be guessing about what might be important to me as the researcher. Even so, some participants still expressed a concern that they may not have given me what I wanted in the interviews. The impact of the perception of the participant of the researcher's status and intent seems pervasive in qualitative research.

By having teachers take photographs in their own time, without any demands being placed on what should or should not be the content, and by providing open ended guidance on the boundaries of the study I hoped to afford them a greater sense of being asked to address what they thought were important aspects of their management of learning spaces. I believe that this was the case and a number of participants commented afterwards that they found the process very helpful in

allowing them to keep a focus on the topic and to also to gain greater insights into the complexity of their work. This effect of the method is reported by (Hurworth, 2003) in her description of photo-interviewing for research.

Another benefit of the method is that the teachers were able to control the interview more as they were asked to set the photo sets out in any way they wanted to on a table and then to simply talk me through each one in whatever order they wanted to and explain what each photo represented. As the interviewer I engaged in active listening (Ivey, Ivey, & Zalaquett, 2014) and adopted a conversational style which allowed me to ask for elaborations to points the teacher was making or make associations between one photograph and another or summarise what I was hearing.

This process of interviewer, participant and photographs interacting, affords the researcher the opportunity to engage in analysis as the interview is actually proceeding (Jenkings, Woodward, & Winter, 2008). The collection of data and simultaneous or parallel analysis of those data is a feature of the grounded theory methodology (Charmaz, 2006). The added value of having photographs to refer back to when doing analysis interrupted by other activities is considerable. The photos can also be analysed for patterns that match those emerging from the analysis of transcripts, field notes, memos and audio recordings. They can serve as visual explications of patterns. For instance, a code that emerged early in the research was 'defining spaces for specific functions'. This code was later renamed as 'zoning'. All of the teacher participants referred to the process of setting up classrooms through what I refer to as 'zoning'. Zones achieve a number of important purposes in classrooms, which are described in detail in the following chapter. Photographic evidence for this process is clearly evident in the photo sets taken by participants. 'Zoning' goes on even when there is limited design support for this process, for instance, in a crowded demountable building.

Reading Figure 4-2 below, from left to right the three photographs demonstrate how one teacher (P3), has established zones in which different activities are undertaken as part of her teaching program.



Figure 4-2 Example of 'zoning' at one site.

Another example of an early code was pedagogical problem solving. This code later became a property of the category orchestrating learning. The photos below are examples of pedagogical problem solving. Reading Figure 4-3 from left to right, the photographs demonstrate how three participants have set up a learning space to achieve learning goals. The teachers have made decisions to establish settings that are developmentally appropriate, cater for collaborative and exploratory learning using concrete materials, or using individual teacher directed and commercially produced learning materials for abstract representations of concepts or skills practice.

Each teacher has made pedagogical decisions in setting up the learning spaces represented in these photographs. Additionally, as students engage with the learning materials and activities, the teachers engage in pedagogical problem solving based on the levels of engagement of the students, the degree to which the students are moving towards learning goals, the behaviours of students that match or do not match the instructional intentions of the teacher.



Figure 4-3 Pedagogical Problem Solving

By using photographic representations of learning contexts, the researcher is able to see what the participant is describing in words at the same time as hearing and recoding those words. This is an important contributor to trustworthiness in the research design and process.

A final positive quality of having photographic data to support interview data is that one photograph can represent a number of different points that a participant might want to make. For instance, one photo might be used to refer to zoning, balancing competing demands, pedagogical problem solving and making do. These are all codes that were generated from the interview data.

4.8 Interview Data and Coding Process

The participatory, photo elicited interviews were all digitally recorded and eleven of them transcribed verbatim prior to coding. Coding progressed on transcriptions as they were completed. The remaining five teacher interviews were not transcribed line by line but were used to look for new patterns that might not have emerged from the other sites and participants. Coding for these last five interviews was undertaken by listening to the audio recordings of the interviews and coding as these progressed.

Open or initial coding was applied, to get a sense of what the participants were reporting at a conceptual level. The initial coding process, called open coding (Glaser, 1978, Charmaz, 2006) was applied to the transcribed interviews as they were completed. To Hawker and Kerr (2007) open coding is a record of the analyst's noticing. "Each code acts as a label to highlight items that have been noticed in the accounts" (Hawker & Kerr, 2007, p. 95).

Coding is essentially a process of discerning patterns in data and the codes are names or labels for these patterns. Beginning with open coding, patterns are given labels. The labels can be short, descriptive terms, phrases or even 'in vivo' representations. The constant comparative process is used to compare 'indicators'

(data bits) to one another for inclusion in the codes. Initial codes are compared with one another and with 'indicators' continually to discern patterns amongst codes. These patterns lift the initial codes to a higher order of abstraction that is more inclusive. The comparative and conceptualising process continues, seeking patterns among the codes until substantive or core categories can be identified that represent the ways that participants in the study resolve their main concerns as revealed through their subjective reflections on their behaviours in context. These substantive categories account for the variation amongst individuals owing to their abstract and inclusive nature (Glaser, 1978, 1992; Glaser & Strauss, 1967).

Code, concept and category are used synonymously in that they are all labels for patterns but they are at different levels of abstraction. A 'code' results from the process of coding and can take the form of a 'concept' or a 'category'. Categories are higher order patterns that are generated by comparing multiple concepts. Both concepts and categories have properties that define them. A category, despite its level of abstraction and despite its transcendence of people, place and time, can still be deconstructed back to the 'indicators' in which it is grounded. In this sense it is substantive. In relation to this process of identifying and naming patterns in the data, Glaser (2011, p. 51) offers the following:

A concept is the naming of an emergent social or social psychological pattern grounded in the research data and generated by constantly comparing many indicators which indicate that pattern and its sub-patterns. It is a form of latent structure analysis. The researcher starts to see what is going on in the data as a pattern and puts a name to it and then it is a conceptual abstraction.

An example of this from my data analysis follows.

I transcribed P3's interview and generated one hundred and eleven initial codes. Some examples are: using negotiation as a core pedagogy; affording students a sense of agency; describing space as cold, uninviting, stark and bare; being spontaneous; and establishing boundaries for choices. Reading, rereading and comparing incidents in the data (transcription) and constantly asking myself "What is this incident about? What does it represent? What does it tell me about the way this teacher is managing space?" allowed me to generate initial codes. With so many codes for this one participant I looked for patterns among them using the same analytical questions and reduced the code set to ten categories. I used Silverstein and Auerbach's (2003) process of repeating ideas to achieve the reduction of the initial set of codes to categories. These categories included: pedagogical problem solving; defining and using spaces; and qualities of space. The names of these categories later changed through the process of constant comparison with the coding from other participants and by reviewing the properties of the initial attempts at generating categories. For instance, managing groups was eventually seen as a property of pedagogical problem solving rather than as a separate category. Pedagogical problem solving included initial codes such as: teaching reflective process; observing that children love to play in the sand; using outdoor spaces for doing a daily art program; using negotiation as a core pedagogy; introducing a homework program. There were initially twenty-one codes included in the category 'pedagogical problem solving' for P3.

The constant comparative process was applied across participant data as well as within it. Ultimately, when categories are generated they are detached from the initial data as they represent patterns across participants and they transcend people,

time and place (Glaser, 2011). But, as already mentioned, if one needs to do so, categories can be deconstructed back to the data from which they were generated.

Knowing when to cease collecting data and concentrate on theoretical concepts that have been generated from the coding process is problematic in grounded theory (Holton, 2010). The issue is not so much one of knowing when to stop collecting data, as one of knowing when a concept or category is theoretically dense and its dimensions or properties are sufficiently well developed as to be at a point of saturation. Once data have been sampled theoretically as opposed to for descriptive accuracy, to generate concepts and categories, the dimensions and properties of the concepts become delimited theoretically. As the researcher proceeds in the analysis through the constant comparison process, a point is reached where new properties or dimensions of concepts and categories fail to emerge. This is considered the point of saturation (Glaser, 2001; Holton, 2010; Morse, 2010).

Saturation of the categories that were generated in this study was achieved by the application of constant comparison of initial coding and higher order coding to generate categories from the data. Initial categories led to further theoretical sampling to verify the dimensions of categories and coding of data with a focus on the generation of new dimensions. The five participants from LCSS provided data that was theoretically sampled as well as being subjected to coding analysis. This helped to verify that the four substantive categories being generated from the data were approaching saturation.

In summary, the coding process took place throughout the life of the study with data being revisited, recoded, memoed on, and conceptualised until a theory was constructed as a set of hypotheses to account for the complex psychosocial processes involved in the daily interaction between primary school teachers and the learning spaces they occupied.

4.8.1 The use of computer data management programs

4.8.1.1 *Compendium*

Many qualitative researchers use computer programs to assist in the coding process owing to the large amount of data that are generated in the research process. I made a decision early on to use a program called *Compendium* (van Hoof & Shum, 2010) to assist in managing the process of data analysis. *Compendium* is knowledge mapping software developed to assist individuals and groups to work with ideas, data and their relationships in an environment that is highly visual and is capable of linking and keeping track of links among complex sets of information. *Compendium* became a repository of materials, ideas and diagrams, and the relationships between these as the study progressed. Most of the data analysis for this study has been done manually meaning that I have digitised the data and created multiple file sets that represent the analysis of the data. Additionally, I have relied a great deal on diagramming and creating relational maps of ideas, literature, memos and codes using *Compendium* and in many cases resorting to a sketch pad and coloured felt pens.

Figure 4-4 demonstrates how I used *Compendium* to create an overview of the many many dimensions of the study; literature; theoretical ideas from extant theories; concepts emerging from the data analysis and links between these. This s a

somewhat messy working space. Additional content in the form of notes or links exists where an icon has digits or symbols attached to it.

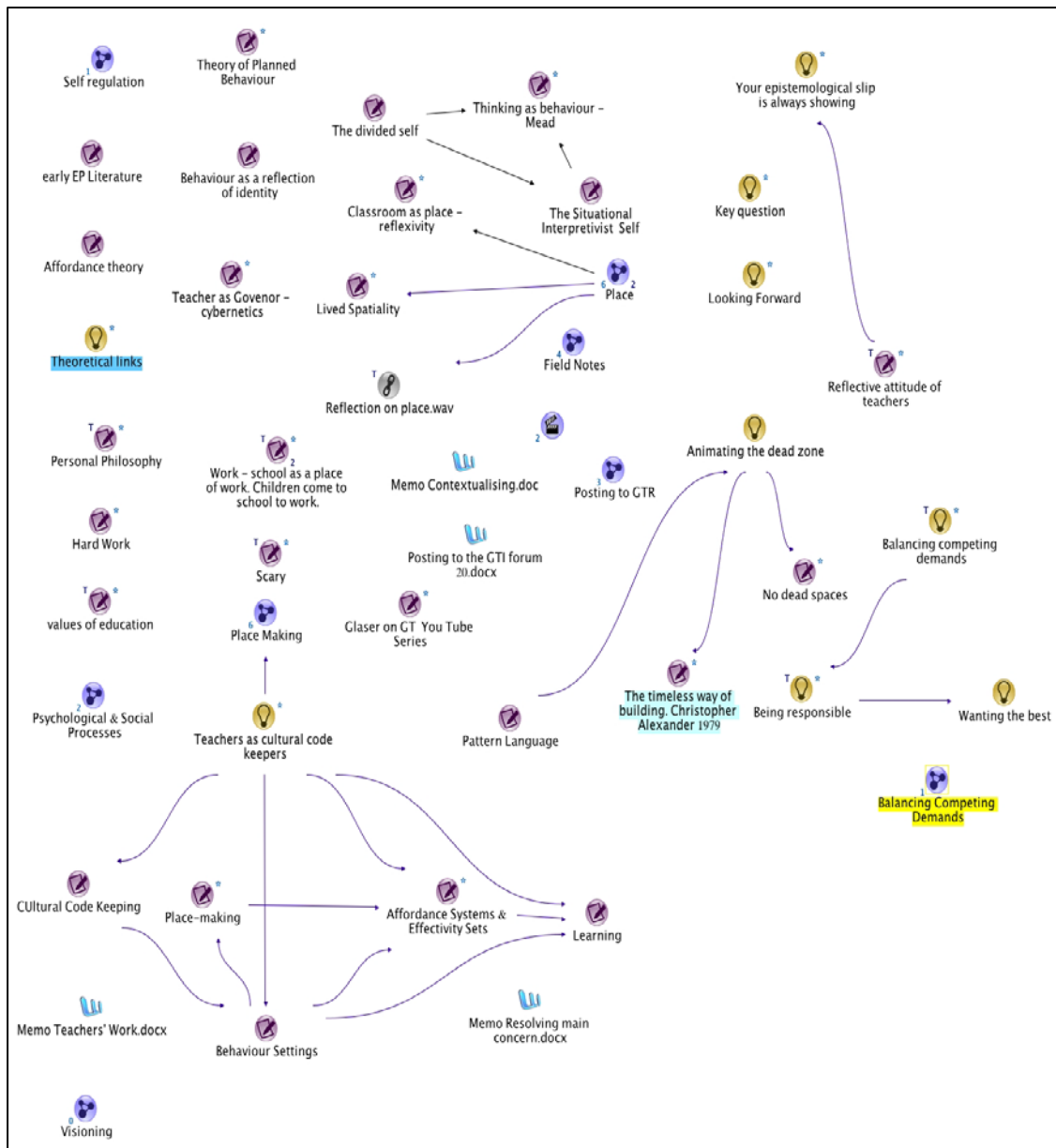


Figure 4-4 Screenshot of Compendium Project Overview

Figure 4.5 demonstrates what is contained with an icon that appears in the overview shown in Figure 4-4. By selecting the icon labeled Place Making the six items that it contains are revealed. The icons in this screen that are labeled with an asterisk contain further information in the form of a note. An example of the note attached to the icon, Creating a home like space, is presented in Figure 4-6. This is a reflexive note that draws on the lived experience of the researcher to explore how the classroom might be experienced as place.

Compendium was used as a knowledge management tool as its creators intended and additionally as a way of recording the evolution of my thinking as researcher.

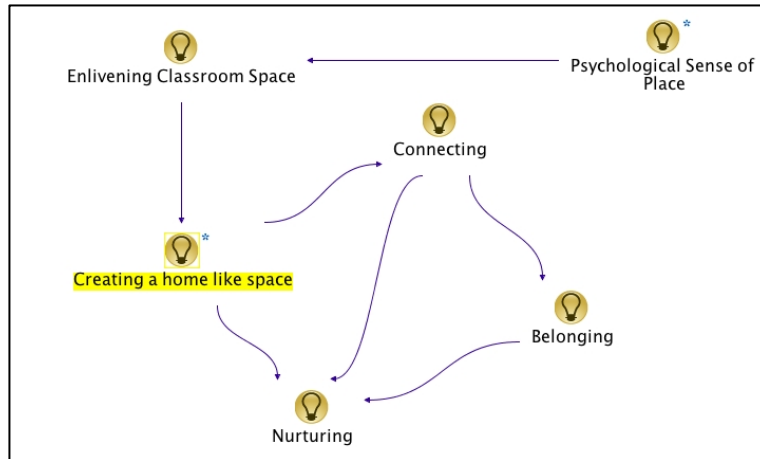


Figure 4-5 Screenshot of Compendium Workspace (Theoretical Category - Placemaking)

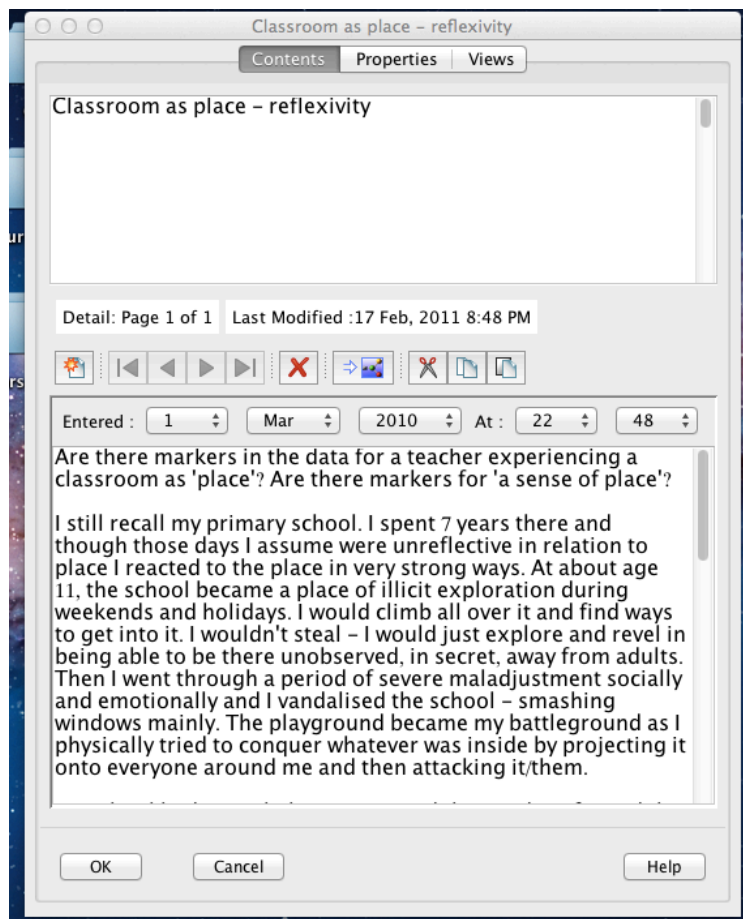


Figure 4-6 Screenshot of Compendium Memo on reflexive response to classroom as a 'place'.

4.8.1.2 HyperResearch.

Somewhat late into the process of analysis I decided to use a computer assisted qualitative research program called *HyperResearch 3.5.2* (Researchware, Inc, 2013) to afford an alternative way of organizing the considerable amount of qualitative data that the study had generated and to provide me with additional power to confirm or disconfirm my analysis of the data. *HyperResearch* is a code and retrieve research

tool that allows for the use of text, audio and image analysis. It provides a convenient way of managing code books, hyperlinks codes across cases and has additional theory building features. I used the program for reviewing case interview transcripts, undertaking additional coding and building a code-book using the categories that I had previously determined through manual coding. This additional process, though time consuming verified for me, the efficacy of the initial and subsequent coding that I had undertaken beginning with the first interviews with participants.

Figure 4-7 shows a screenshot of a case in HyperResearch is layed out to allow for easy coding of text and the building up of a code book associated with the study. As a code and retrieve program, HyperResearch builds up complex links between codes, data and cases. It allows the researcher to see how a code is constructed from incidents in the data of multiple cases.

PHD.lis2

Case Filter: All Cases 18 of 18 Filter Cases Annette

Code Name	Source	Type	Position
Teaching Experience	Annette text.docx	Text	2733.2791
Teaching history	Annette text.docx	Text	2793.3517
Preferred year levels	Annette text.docx	Text	3519.3830
values of education	Annette text.docx	Text	3832.3872
Teaching history	Annette text.docx	Text	3881.3999
Fulfilling social needs	Annette text.docx	Text	3519.3797
Maintaining professional skills	Annette text.docx	Text	4279.4456
Appreciating professional skills	Annette text.docx	Text	5863.6343
being visible to peers	Annette text.docx	Text	7335.7543
dimensions of space influence teacher behaviour	Annette text.docx	Text	8382.9197
aesthetic dimension of space	Annette text.docx	Text	9478.9713
qualities of space impact on work	Annette text.docx	Text	9714.9810
classroom management complexity increased	Annette text.docx	Text	10131.10394
qualities of space impact on work	Annette text.docx	Text	10643.10779
quality of student relationships	Annette text.docx	Text	10410.10632
work as a social context	Annette text.docx	Text	10856.10893
symbolism of pictures	Annette text.docx	Text	15273.15494
Accessible ICT	Annette text.docx	Text	15972.16331
A more adult world for students	Annette text.docx	Text	16305.17783
zoning	Annette text.docx	Text	17931.18798
encouraging self-regulation	Annette text.docx	Text	17859.18797
negotiating	Annette text.docx	Text	17859.18797
zoning	Annette text.docx	Text	18818.18944
Being visible	Annette text.docx	Text	18818.18944
building self regulation	Annette text.docx	Text	18818.18944
building trust	Annette text.docx	Text	18818.18944
controlling	Annette text.docx	Text	18818.18944
monitoring/surveillance	Annette text.docx	Text	18818.18944
quality of student relationships	Annette text.docx	Text	18818.18944
work as a social context	Annette text.docx	Text	18818.18944
Being visible	Annette text.docx	Text	17931.18798

Code Filter: All Codes 41 of 41 Filter Codes View Annotation View Source

Code Book

Edit Code Apply Codes

99 Codes, 8 Groups

- ▼ All Codes
 - ▼ Being in relationship
 - Being visible
 - building self regulation
 - building trust
 - controlling
 - encouraging self-regulation*
 - monitoring/surveillance
 - quality of student relationship
 - work as a social context
 - ▼ Being in space & time
 - A more adult world for students
 - adjusting accessibility to
 - aesthetic dimension of space
 - arranging
 - providing for physical context
 - qualities of space impact
 - Sense of ownership
 - spatial constraints
 - spatial contribution to affordances
 - teacher perception of change
 - being spontaneous in time
 - Challenge of organising a learning environment
 - classroom management complexity increased
 - dimensions of space influence
 - free up time
 - having teaching aids to hand
 - maintaining routines
 - making do with limited space
 - making expectations explicit
 - Miscellaneous
 - Preferred year levels
 - psychological sense of place
 - sense of community
 - sense of place
 - symbolism of pictures
 - ▼ Orchestrating Learning
 - Accessibility problems with affordances
 - Accessible ICT
 - affordances serving multiple purposes
 - affordances supporting learning
 - allowing student activity
 - assessing student progress
 - Balancing competing demands
 - Collaboration
 - Description

Source: Annette text.docx

Default Font and Size

Related Media

Oh yeah

With um Peter Burrows and he was looking at the format of planning and units of work so there Deb was of course involved and Margo and myself and Michelle and um a couple of other Susan Drummond anyway so we went to Melbourne to one of the conferences they had and then the next time we went we presented some of our units of work and we visited some schools down there that were also involved in the project and Werribee was one and they had started to move their school into these new learning spaces. Traditional but also modern anyway um, we really were impressed with some of their open room spaces and we said oh we really like that and one thing lead to another and Deb being Deb said I think I know a way to get that and would you 2 like to be together do all the teaching and that sort of thing. So um after that we became involved in the State Schools of Tomorrow project I think that was its name um and um we became involved in that thanks to Deb and the architects came down and we discussed different things - excuse me - and um we um they asked us what we would like and they sort of said what the structure was possible and anyway um it took quite a while for the building to be renovated we'd been done up for 3 terms waiting for it to happen and it happened so um yeah and um mean while we were working on a unit of work where the kids looked at different paint colours what they represented um carpet samples, furniture we knew we wanted flexible um moveable furniture where we could move them into groups and things like that. Deb and Margo and I looked at YouTube footage of UK schools where they had this sort of open room spaces and different things that suited boys and furniture and all of that so all of this was going on while the building process was happening and then the um furniture business also where we got the furniture, she came down showed us what was possible and things like that um the unit of work was called Creating, Captivating Classrooms and yeah the kids decided that green well after their research green was calming so we would have to have some green walls in our room and um blue sorry blue was calming green was creative so we've got some blue and some green we voted on the carpet and they loved the spots and this TNC thing was in the YouTube film that we saw and

That's Bizfizm?

Yeah Bizfizm yeah and you know we were just so lucky to be able to be given everything that was more or less was on our wish list,

Goodness yeah

And also technology a lot of technology uh equipment as well um we've got the interactive white board we've got a HDR recorder, we've got the (1917) the you know docking the camera, things like that so that was great too. So um

And is there wireless in the area?

Not yet we don't have laptops and actually I'm wrong there is wireless but we tend to use the blue cord because sometimes we can't get G drive in that um so we do tend to use but at the we're getting laptops to use in the room but at the moment we have to the (1945) to use the computers for the kids yeah. Um yeah so um we were very excited in term 4 when we could move in and um yeah these are the different areas in our room, this is where the kids first arrive, they come up and they're all very excited about to more of an adult world when they come in because they can have their tudy tray, hat shoes, shoes are off, we have a shoes off policy in the room and their bag underneath so its all still there and they can just go to it and whatever, um yeah so this is where they walk in uh this one is where they first meet base camp in the morning, we called it base camp because you know camping theme and the challenge of you know chose a challenge (20:40) and stuff like that so that's base camp, this area here is called Campfire and then this area is here is water and coal because there is a fridge and a water cooler in that section as well and we also have a cave but um a photo wasn't taken but we took one of the cave but maybe not we've got another area that just out for um single or independent reading, some kids need a bit of a break from the big class so they're over there on their own for a little while in this cave area yeah so they're our names and um yeah this is base camp as I said we need to start the day off collect money, notes, tell them where they're going kind of thing. This is a photo of base camp here we do have some bean bags that come out um from behind here for the seating for sight reading and things like that, we used to use to use the bean bags in base camp all the time but we found it was quite distracting the kids they just couldn't handle it so we just sort of gradually working up to that. This little seat on its own here some kids um if they're not focussed when they're in base camp in a big group or even when they're in our other areas and they need to be on their own we just settle and focus that's the spot so there's what's negotiable, what's not negotiable when you are here.

Accessible ICT

A more adult world for students encouraging self-regulation zoning

using space to sanction behaviour

Display Codes In Context

Figure 4-7 Screenshot of basic case layout in HyperResearch

4.9 Memoing

Lampert (2010) places memo writing at the heart of grounded theory analysis. Memos are one artefact of the researcher's analysis of data and begins with the collection of the first data set and continues throughout until the write up of the theory. "Ultimately it is the integration of these abstract analyses developed in memos that the researcher shares with a public audience" (Lampert, 2010, p. 245). Memos transcend description of the social or psychological worlds of participants in a study and record the researcher's conceptualising at a theoretical level. They have been likened to a researcher's conversations with him/herself as the analytic process progresses (Lampert, 2010). They make available to the researcher and to the research's audience, evidence of the analytic process and how the final theory was developed. Glaser (1978) regards memoing as the foundation of theory building. In practical terms, memos are the process by which the researcher theorises about the codes that are generated from the data. They are the product of the interrogation of the data and the patterns discerned in it (codes, categories, concepts).

Holton (2010, p. 282) asserts, "That the basic goal of memoing is to develop ideas with complete conceptual freedom." Memoing is a form of note making that involves conceptualising the data and the concepts and categories being generated from it. It is a process through which the researcher makes explicit his/her thinking about what the data are about and how those data inform a theory. Memos can be short notes, diagrams, detailed descriptions, comments on field experiences, reflective pieces, audio recordings, or detailed writings on theoretical relationships between categories and their properties. Memos make visible the analytical process of the researcher in all its messiness. Keeping a memo bank allows the researcher to return to earlier ideas and to sort the memos in such a way that they can assist in building an integrated theory of what is going on in the substantive field.

The following is an example of a two part memo written as I reflected on the category, Philosophising which emerged from my initial coding of transcripts.

Example of memo

P2 mentions personal philosophy early in her interview. She also mentions the early years philosophy (Early Years Curriculum)
Follow this up with P2: What is her personal philosophy and how is it reflected in the ways she manages learning spaces?
What are the elements of a personal philosophy?
What informs a personal philosophy?
How stable is it over time?
Tease out the tensions that exist when one's personal philosophies clash with the constraints of space, crowding and other factors.
P4 mentions the 'values of education'. Are these related to a personal philosophy or are they more of a collective nature? Are these 'values' generally accepted by teachers?
Can they be named?
How do they impact on decision-making?
How do they influence management of space?
What happens when one's values and behaviours are misaligned or when something interferes with the living out of these values?
P10 and P11 have a Teaching Philosophy Statement that they have formulated to

guide their pedagogy.

How would one go about articulating one's philosophy? What would it include? A statement of beliefs about learning? A set of values? Epistemological beliefs?

Ontological beliefs? A statement about the role of schools in society?

Remember: your epistemological slip is always showing.

Philosophy: Epistemology & Metaphysics

Also: ethics, logic and aesthetics, philosophy of x and history of philosophy.

Perhaps teachers typically articulate a 'naive' philosophy?

29/05/11

If applying a personal philosophy is a main concern of teachers in managing learning spaces what are its properties?

Personal philosophy involves many of the categories identified in the interviews:

- * Views on what learning means
- * Pedagogy to support learning
- * Managing various aspects of the physical / social / psychological / cultural space matrix
 - * Boundaries
 - * Groupings
 - * Time
 - * Safety
 - * Responding to individual needs
 - * Managing transitions
 - * Establishing functions of spaces
 - * Embedding technology
- * Creating a socially accepting place
- * Promoting self regulation
- * Dealing with tensions

A personal philosophy is multidimensional. Ethics / Metaphysics / Epistemology / Aesthetics.

Another example of memoing shows how I was reflecting on the ways that participants mentioned work in their interviews:

Example of memo: Hard Work

“In vivo” code: “hard work”

P4 mentions the 'hard work' of managing her classroom despite being so positive about it. She also mentions it is 'hard' or 'challenging' for relief teachers - she explains this in part as being about having to work in front of another teacher when they go into the class. It seems you can't work the classes as two separate classes. The routines, procedures and management expectations of the children might prevent this?

Interrogate this category:

What does 'hard work' mean?

What makes the work hard?

How is hard work experienced?

How is it different to easy work?

What about the classroom makes it hard work to manage?

What does it mean to manage the room?

P4 also refers to the experience for relief teachers as being daunting?

If managing her class isn't daunting for her then what has happened for it to not be

so?

P7 also mentions that she has never worked so hard in her teaching career as she is now in her refurbished learning space. She sees this as being satisfying but hard work.

P5 also mentioned in her interview how hard it was working in the refurbished classroom. It presents her with a number of challenges that make it hard work. These three teachers are satisfied with the space but I think they want it acknowledged somewhere that it is not easy to make the change nor to operate in the space despite the many benefits it brings.

An example of a more theoretical memo follows:

Example of memo: Lived Spatiality

Lived Spatiality

This concept from van Manen struck me today as being an answer to a lurking but vague concern I have had that my research is somewhat pedestrian and shallow. I think I and perhaps my participants have been looking at space from a geometrical perspective - space as a description of the features of the space, the dimensions of space as opposed to the 'lived experience' of space with all that this includes.

Asking teachers about their experience of place might afford additional dimensions to the analysis. Teachers manage space to afford learning opportunities and afford an experience of schooling. Children experience more than the activities they engage in as directed by teachers. They too, experience 'lived spatiality'. Do teachers set out to provide a quality of lived spatiality for children as part of their management of learning spaces?

Our experience of space might be intentional. In order to cope with certain anxieties we manage space in particular ways. We keep control in order to maintain a sense of control and relieve anxiety. This invokes a very bounded experience of space.

What happens when we allow ourselves to stop controlling and let our experience just happen? We might have an experience of a non-ordinary state of consciousness – e.g. reverie or a merging of boundaries (John Cameron's article on his experience of a non-ordinary state of consciousness on the Scottish coast while he was researching place). Or we might have our attention sharpen on some feature of the environment that then begins to reveal itself in ways it hasn't done for us before.

Initially, memos tended to be closely tied to the actual data from the interviews. As the study progressed, I wrote more memos on concepts / categories and how these worked or related to each other. I also wrote more memos of an abstract theoretical nature that drew on theoretical constructs from a range of disciplines. The following is an example of a memo that draws heavily on educational theory:

Example of memo: Teacher's work and Teaching spaces

Memo 2/10/2011

Teacher's Work and Teaching Spaces

Primary school teachers are required in their daily duties to manage classroom spaces in such a way as to afford learning opportunities for students, ensure the

physical and psychological safety of those who participate in the life of the class, encourage a sense of connection and belonging to a cohesive group and respond to the individual needs of a diverse cohort of children who come from diverse backgrounds.

The role of teacher is multifaceted and complex. The class environment and its management is but one facet of a complex role that includes designing, and/or interpreting curriculum, planning learning programs that are inclusive and responsive, engaging in a dynamic process of aligning curriculum intent with pedagogy assessment and feedback, and being emotionally as well as morally and intellectually present to their students.

Teachers engage in pedagogical problem solving in real time as conditions in the classroom shift and change and as they monitor learners and respond to their perceptions of how learners are progressing in any particular learning event or process.

The daily activities of teachers cannot be separated from the broader contextual backdrops that influence their practice. These include, the immediate community context in which they are situated, curriculum imperatives, priorities and design changes, systemic policies, legislative contexts and broader socio-political influences. They are at the same time, influenced by their own personal and professional histories, values and ‘readings’ of their roles, the children they teach and attitudes in relation to what they consider valuable to learn and therefore to teach.

Teaching is a relational profession.

Teaching involves emotional labour.

Teaching takes place in space and time and teachers are cognizant of both as they go about their daily work. We can all remember something about the schools and classroom spaces we inhabited for six hours per day over a period of often twelve years of schooling. Classrooms are rich sources of formative and transformative experiences that impact on the psychological development of a person and influence significantly many aspects of an individual’s future life.

The same can be asserted in relation to groups of children in schooling systems in a society.

For a long time educators treated the spaces in which learning was to take place as being passive as far as the learning process went. Learning was seen as a psychological, and in some ways a moral process. Throughout the 19th and twentieth centuries and enduring in many schools today, the predominant paradigm for school design was ‘Fordist’ in nature. The role of the classroom spatial arrangement reflected the dominant pedagogical approach that was teacher centred and based on a transmission of knowledge model. This reflected a broader view of the cultural roles of education at the time – preparation of the citizenry for undertaking vocational roles that supported the industrialised economies of developing nations. (See Kalantzis & Cope)

The evolution of learning theory to include constructivist constructs was a major shift in educational theorising and practice. It held implications for the ways that space was utilised to promote learning. Likewise, social constructionism had similar impacts. But the process was really one of the role of space remaining passive. Space and the variant and invariant elements within its bounds were

manipulated by teachers to support learning, supposedly reflecting the new paradigm of learning theory.

It is only in recent times (Lippincott) that space has begun to be seen as having an active role in the learning process. There have been exceptions to this generalisation. Early childhood teachers and certain counter cultural school models such the Reggio Emilia movement have seen space as the 'third teacher' and privileged its role in the learning process.

These examples of memos demonstrate the range of content, conceptualization and level of abstraction evident in their creation. A memo bank is built up from the beginning of the research process and continues until the research is completed. This memo bank is a repository of the researcher's processing of data and associated conceptualizing. The memos themselves become a source of data for the study and have the added role of showing how the researcher's thinking evolved over time. The memo bank can become a further source of data for future development of concepts that are worthy of research, but that did not make it to full development in the generating of the theory.

4.10 The role of extant theory, literature and researcher position

Classic grounded theorists are beseeched to enter the field of research with an attitude of open mindedness. The researcher is advised to avoid too much engagement with the extant literature pertaining to the substantive field in order to avoid inadvertently forcing theoretical constructs on the data and hence subvert the 'grounded' nature of the resulting theory (Glaser, 2011). The process of completing a doctoral dissertation requires a student to complete a complex proposal of the intended study. This includes outlining, among other things, the substantive field, relevant research questions, a literature review and proposed methodology. I entered into the doctoral program with a strong interest in environmental psychology and how it attempts to account for people-in-environment interactions. As I have completed formal education in family therapy, I have also had a long-standing interest in systems theory and its accounts of human behaviour. Thirdly, as an educator of nearly three decades I was frustrated by the failures of the mentalist approach to learning theory, to have the impact on teacher practice that it promised. My readings in these areas highlighted to me that as embodied beings, we are immersed in time and space and as such, where we are, is a strong influence on who we are, while we are there and therefore how we behave in context. These ideas and interests and deep engagement with related literature over a period of years have had a significant influence on my thinking throughout this study.

When engaging in coding of data, or looking for patterns between categories or even naming categories, I have often been aware of seeing patterns that are reflected in elements of my reading. The experience is likened to using multiple lenses through which to view the same territory. I am sure that another researcher with a different background would have access to a different set of lenses through which to view the data and interrogate those data. Researchers are not tabula rasa as they enter into the research enterprise. Being aware of this natural process of pattern recognition or making connections among my own experience, theoretical constructs from the literature, and my understanding of psycho-social processes as described in

academic literature was helpful in ‘bracketing’ these ideas, and coming back to the data to interrogate those data again for patterns inherent in them.

Ultimately, I believe that subjectivity is unavoidable in research of this kind and that being overly concerned with accurately representing participant voice or interpretation of what participants are communicating conceptually is unproductive in terms of building a substantive theory. The data are, after all, the subjective reflections of participants on a particular aspect of their lives at a certain time under certain conditions. Conceptualising concepts and categories (both of which are patterns in the data) transcends people, time and place. The theory generated from the application of grounded theory methods is ‘grounded’ in the empirical data, but it transcends the particular.

I have made attempts to be mindful of the tendency to use extant constructs in a process of forcing the data to fit the constructs. Categories in grounded theory emerge from the data and though they may indeed have relevance to theoretical constructs they are grounded in the data in such a way as to stand free and unencumbered by the extant theories of a discipline. This is what gives the method its capacity to generate new theory. As is revealed in the following chapters, the core categories that explain the main concerns of participants in this study are recognisable as constructs that have been developed in Environmental and Ecological Psychology, and Human Geography. The emergence of these categories from my analysis of the data of the study comes from my attempts to integrate extant theory into my analysis, using it as additional data itself to inform my theory building.

4.11 Credibility

A constant question that I asked myself throughout this study was, “Where could I have got this wrong?” As noted earlier in this chapter, this study is my honest attempt to address an area of interest that has not been adequately accounted for in the academic literature, in the hope that through gaining a better understanding of this area, benefits may flow through to practitioners, policy makers, and ultimately children and young people who attend educational facilities. As a researcher, I am required to consider how plausible my conclusions are and how I will know if they are flawed. How can I ensure that my research conclusions and proposals are credible?

This study is hypothesis generating. Theory is a set of hypotheses that can then be investigated through verificational research. The substantive theory constructed through this study is a possible account for how primary teachers resolve their main concerns in designing, managing and maintaining learning spaces as part of their daily workflow. The following points deal with my attendance to the issue of credibility in this study:

- The theory achieves credibility by being grounded in empirical data systematically collected and analysed.
- The analytical process is transparent and evidenced by the processes of coding, memoing, authenticity of data.
- Researcher bias is accounted for by making reflexivity an explicit feature in reporting on the research process and its yield.

- Reactivity, in this study is minimised by the use of the reflexive photo-elicited interview process.
- The categories that are generated by the researcher can be logically deconstructed back to the original data from which they came.
- The theory fits the field under investigation.
- The theory works to account for the relevant behaviour in the substantive field.
- The theory has relevance for those in the substantive field.
- The theory is modifiable as new data emerges.

Adapted from: (Glaser, 1998; Glaser & Strauss, 1967)

Glaser (1998, p.18) refers to 'fit' as, "...another word for validity. Does the concept adequately express the pattern in the data which it purports to conceptualise?" The methodological process for ensuring fit in grounded theory is the constant comparative process. The constant comparative process requires the researcher to be engaged in a process of comparing indicators (data) to indicators in order to generate concepts that are patterns in the data. Comparison of concepts to concepts and data in an iterative fashion keeps the researcher in a conceptual process that transcends description of the data alone, as in theme development used in qualitative data analysis. Concepts, categories, core categories and codes are not the same as themes. They are all representations of patterns that are discerned by the researcher and ultimately, the process of constantly comparing each to others is designed to move beyond description of the data, to a theory that explains the latent psycho-social patterns of behaviour in a substantive field. The process of constant comparison along with memoing enhances the research credibility by providing an audit trail of the researcher's conceptualising towards theory building. One cannot realistically demonstrate the constant comparison process as it works in real time as a cognitive process. Artifacts of the process must suffice to demonstrate it.

One strategy I used to gain evidence of the 'fit' and credibility of the developing theory was to design a workshop for teachers that introduced the main ideas of the thesis through an activity that invited teachers to analyse their own experience of learning spaces through the lenses of the four substantive categories generated by the analysis: Orchestrating Learning; Maintaining personal/professional roles and identity; Being in and maintaining relationships; Being in time and space. I delivered the workshop to over twenty teachers at a conference held in Toowoomba on 17 September 2013 and coordinated by Leadership Research International (Hughes, 2013). I received encouraging feedback on the pragmatic application of the categories for teachers to consider in managing learning spaces.

4.12 Summary

The methodology applied in this study is qualitative and uses rich qualitative data to build a substantive grounded theory of how primary school teachers design, manage and maintain learning spaces as part of their daily workflow. The methodology is aligned with the conceptual framework presented in Chapter 2 and supports the research goals, research questions and overall design.

Chapter 4 has elaborated the conceptual framework to demonstrate how the methodology deals with crucial issues such as epistemology, reflexivity, sampling and recruitment of participants, ethical issues, the nature of data and their collection

and analysis, the use of computer programs to assist in analysis, and credibility. The processes of coding, constant comparison and memoing were described to help the readers to work their way through the following chapters more easily.

The yield of the analytical process is divided into the next three chapters. Chapter 5 demonstrates the complexity of the environmental context in which primary teachers operate and which they must respond to as part of their daily workflow in learning spaces. Chapter 5 also outlines the process by which the researcher arrived at the hypothesis of what represents the main concern of primary school teachers in the context of their actions in learning spaces.

Chapter 6 demonstrates how four substantive categories of action were derived from the analytical process and how these work to resolve the main concern hypothesized from Chapter 5. Chapter 7 proposes a theoretical category to integrate the substantive categories of action outlined in Chapter 6. Chapter 8 deals with the implications and recommendations that follow from Chapter 7. It also identifies the limitations of the research and possible future research endeavours based on the theory proposed in Chapter 7.

Chapter 5: Contextual Complexity

5.1 Introduction

This chapter outlines the analytical process through which the qualitative data gathered from participants, was processed to hypothesize their main concern. Initial analysis of the data indicated that a context of complexity dominated the subjective reflections of participants. This background of complexity is dynamic and always present as a context in which participants are immersed as they go about their daily work as teachers. The account offered in this chapter is a reduction of what is really a holistic transactional system. The reduction is necessary for the researcher to make visible, aspects of a dynamic system. The context of complexity forms a background through which the main concern of the participants was hypothesized. Without an understanding of this background, the main concern would be decontextualised and less likely to form a credible account of participant experience.

In Chapter 2, I outlined the conceptual influences that contributed to my overall conceptual attitude in this study. Werner, Brown & Altman (2002, p. 212) assert that, “A transactionally oriented researcher’s goal is to understand a phenomenon in its complexity, with as much coherence and integration as feasible.” My initial reactions to the interview and photographic data indicated to me that the participants saw reflections on learning spaces in holistic terms that included physical, relational, pedagogical, temporal, curriculum and learning dimensions. Learning spaces for these teachers were not merely physical spaces that either constrained or promoted certain ways of behaving. There was an experiential tone to the reflections of participants that pointed to what is it like to be, in the spaces they referred to as, learning spaces.

The photo-elicited interviewing process allowed participants to access the meaning they constructed around the photos they took of their learning spaces. It also facilitated generation of meaning as the interview process progressed. This led to a conversational interview that was wide ranging. The greatest number of photos was of classroom settings. Early childhood teachers took many more photos of children in outdoor contexts like sandpits and playground equipment areas where informal play took place. Outdoor spaces used by the teachers of older students tended to be more formal: gymnasiums, playing fields, swimming pools. The subjects of the photos themselves was important data, however the rich experiential descriptions provided by the participants indicated that time and space were contextualized by a wide range of dimensions that painted a picture of complexity.

Table 5-1 Examples of outdoor, classroom and other learning spaces.

Outdoor learning spaces	P 2	P13	P3
			
Class-room	P8	P7	P12

spaces



Other learning spaces

P3



P4



P6



In the interviews, the participants indicated that learning spaces for them were not merely physical. They were social, relational, pedagogical and in some ways reflected the personality or predispositions of the teachers themselves. They had a holistic view of situated teaching and learning and developing in context.

The initial formal analytical process of coding in grounded theory however, tends to fracture the data and a process of reduction occurs that reveals the contextual dimensions of the substantive field. This reduction as mentioned above is not a description of the transactional processes at play. It identifies a number of dimensions that have mutual influence on each other in real time. The first section of the material that follows, deals with how the contextual dimensions were identified through data analysis. The second section deals with the discernment of the participant's main concern as teaching professionals embedded in this complexity on a daily basis.

This chapter will lay the foundation for the grounded theory that follows in subsequent Chapters 6 and Chapter 7. The structure of the chapter is as follows:

- Contextual information relating to theory building and contributions of extant theory
- A conceptual model of complexity in the process of designing, maintaining and managing learning spaces
- Identifying the main concerns of participants as they design, maintain and manage learning spaces as part of their daily workflow

5.2 Contextual information relating to theory building and contributions of extant theory

Classical grounded theorists following the methods of Glaser (2001), are very wary of the temptation for researchers to be seduced by extant theories of human behavior and to allow these to shape their analysis of their data and ultimately to reproduce these theories. Missed opportunities for genuinely new and possibly powerful theories to explain human behavior can be missed in this view.

It can be argued, however, that in a field like environmental psychology there are already many robust and well-validated theories to explain human behavior in environments, and because of this, research should focus on building on these or

applying them to specific environments where research is limited. I argued in Chapter 3 that the existing research into the classroom environment from a range of disciplines, but particularly from the environmental psychology perspective, does not address the teacher experience of being an actor in the design, management and maintenance of learning spaces. I also argued that, rather than using existing theories to try to explain teachers' experience by applying the hypothetico-deductive approach, it was more appropriate to apply inductive, hypothesis generating methods to build a theory. As the process of analysis progressed though, I became increasingly aware of how many elements of the data I collected, reflected, or could be partially accounted for through existing theories.

Theories of control, stress and coping, homeostatic processes, territoriality, crowding, privacy, personality and environment, and the influence of external environmental factors such as noise, colour, light and design, all seemed to be relevant (Bell & Fisher, 1990; Gifford, 1997). My analysis was never going to occur in a theoretical or experiential vacuum and as it progressed I could see the benefits in being aware of this, while at the same time, staying grounded in the data I had managed to collect for the study.

The fact that fragments of the data reminded me of these extant theories indicated to me that each one formed only a part of a complex weave of theories that address teacher behavior only partially. On any given day, or part of a day, a theory of stress and coping would be entirely adequate to account for an individual's responses in an environment. This theory, at the same time, would not adequately explain the complex psycho-social processes the same teacher is involved in, as she responds to the perceived learning needs of a group of children in a pedagogical moment. A more ecological and social psychological theoretical perspective may be more helpful here.

As my analysis of data progressed I saw many opportunities to link to extant theories. This presented somewhat of a challenge in grounded theory terms. It was necessary to suspend as far as possible, or perhaps 'bracket' is a better term, my awareness of these and continue to focus on what the data before me was revealing, about patterns of behavior, to account for how primary teachers resolved their daily concerns related to learning space management. On the other hand, "if all is data," as is suggested by Glaser (2001, p. 145) then this includes the researcher's tendency towards generating interpretations of data based on theoretical sensitivity. Hence there is a dance of sorts where theoretical sensitivity, as a researcher capacity, not a repository of theoretical concepts, meets with the open-minded process of analysis.

The role of a grounded theory is not verifical, nor critical. It is primarily empirical and its method of analysis is inductive. I have made a sincere attempt throughout the analytical process to deconstruct the concepts generated by the analytic process back to the data, in order to achieve a high degree of groundedness.

At the same time, extant theories can be used to assist in the application of the researcher's theoretical sensitivity. They become stimuli for further reflection on the core questions of grounded theory: What is going in this context? What is the main concern? How is the main concern being resolved?

5.3 Complexity as an environmental context

The manifest complexity of the learning space environment is reflected in the ways that the participants discussed their experiences with learning spaces. The following section introduces this complexity through a description of the data analysis process, and the subsequent development of a contextual framework that attempts to capture the dimensions that contribute to it. The data analysis approach used in grounded theory allows for the simultaneous, multiple yields of the process. That is, the contextual framework is one yield of the coding and memoing process used in conjunction with constant comparison. The generation of substantive and theoretical categories that assist in theory building is another yield of the same process. The former is more descriptive and the latter more theoretical and abstract.

5.3.1 Complexity as a contextual dimension in the learning space environment

From very early on in the interview and coding processes, it was clear that the design, management and maintenance of learning spaces was a complex process for primary teachers. Using the reflexive photo-elicitation process proved to be a good investment for me, in that participants provided such rich and detailed descriptions of a complex skein of behaviors, intentions, constraints, enabling factors and relationships that all worked dynamically in a systems fashion. It was evident that teachers were highly intentional, and set about managing environments in order to bring them into line with those intentions. However, they were also mindful of the need to be flexible and responsive to what they saw as quite fluid and somewhat unpredictable contexts.

I interpreted all of the participant's interviews as indicating that they considered their role to be central in the good management of learning spaces. They planned, organized, managed and orchestrated learning in context, and learning space was part of this overall complex process. Though early childhood teachers tended to articulate a philosophy of child centered and guided learning, even these teachers indicated that the role of the teacher was central to what happened in the learning space. One code that reflects this is 'looking forward'. Teachers indicated that they considered how a learning space was managed to promote self-regulation in students because they were always looking forward to the next developmental phase and the demands that future environments would place on their students. This is particularly relevant at major transition points in schooling such as from preparatory classes to year one and from year seven to secondary school. In this sense, teachers are planners for student futures as well as for managers of learning spaces on a daily basis. They are planning to help students learn how to cope with increasing environmental demands. Many readers may not like the term 'manager' in the context of contemporary educational philosophy, however, this was the term that I felt was most appropriate to reflect what the participants told me. They indicated a strong sense of agency in the context of their learning space operation on a day-to-day basis.

Memo Looking Forward 26/03/11

Listening to teacher's narratives about managing learning spaces the concept of looking forward emerges. Preschool teachers look forward and prepare pupils for year one, year one teachers look forward to year 2 or even further to year 4 where the space for learning often seems to become more formal and structured. Year 4/5 teachers look forward to preparing students for upper school and year 6/7 teachers are preparing students for high school. Junior high teachers look forward to senior school and senior to transitioning to work or higher education.

Memo Looking forward 26/04/11

At all levels of education we seem to always keep an eye to the future - we are looking forward. Teachers in this study mention preparing students for the future. Ultimately the future is full participation in society (see P2) but at the micro level, we are preparing students for the next phase/stage of their learning journey. Prep is preparation for what, if not for year 1? We have to school children to prepare them for schooling! Early childhood teachers are preparing children for the more formal educational environments found in years 3, 4, 5 and year 6 teachers are preparing students for year 7 which is a transition year to year 8 on so on. Each teacher plays a role in preparing students for the next teacher who prepares children for the next. This looking forward is a process of skilling children to cope with more and more demands from curriculum and its delivery. The learning becomes ever more abstract - removed from the authentic context - requiring more complex reasoning skills, language and ways of communicating. Greater emphasis on declarative language accrues as the child progresses. Expectations of more sophisticated social and emotional skills also accrues.

[Excerpts from two memos on the code, looking forward.](#)

P3 (Years four to seven class) from transcript:

But to encourage them to try a build the amount of attention span they had and their ability to engage for longer periods -, especially some of the year 7s off to high school next year because they are really going to have to engage for you know perhaps 45mins up to an hour - so I decided that what I would do was utilise outdoor spaces which apparently had never been done before.

P6 (Year 7 class) from transcript – referring to preparing students for future learning contexts:

And it was really hard in some ways because I knew and even now there's some students who would still like to work off on their own but I'm also trying to get them focussed for next year when they go to high school where they've got a double desk and basically um there's only enough space for every single person to come in to the classroom and if you're the last one then you get the last spot in the room sort of thing.

P2 (Preparatory Class) from transcript:

P2 is looking forward to the adult roles that children will grow into:

I just think it's the way it should be its um kids are learning and I'm learning still um and there's been studies that show like long term studies that have shown the children who have been in classroom like this where they've had power and some say and the understand that they have rights that they have a voice that they'll be listened too, but that they also need to respect the rights of others actually at the end come out as being citizens who are more likely to participate in society as a productive um a productive citizen in its not just a person who gets a job but it's a person who will move on to working well within their that they um understand that they um actually have an obligation to use [55:33]

Examples comments by participants coded as looking forward.

One opportunity to reveal the way that primary school teachers respond to environmental variables presents itself, when significant changes are made through classroom refurbishment. At school C (see Appendix 1), a number of classrooms had been refurbished to reflect the principles of teaching and learning for contemporary times. In this situation, teachers who had previously been 'traditional' in their approach and who had children arranged in rows facing the 'front' of the room, were now allocated spaces that had multiple areas with different types of furnishings, and a spatial pattern that decentralised the role of the teacher. These teachers referred to the challenges presented by the space, to their whole view of what teaching was about. They had to adapt to this new space by looking for new ways to teach and even interpret the curriculum. This ultimately, in all cases, led to professional growth and a sense of wellbeing as they realized that the new decentralised role that the space demanded of the teacher, was actually contributing to a more relaxed learner experience, and ultimately improved learning outcomes.

Initially though, the sense of lack of control imposed by the space was perceived as somewhat threatening. It also created considerable demands in terms of the amount of work that these teachers had to do on a daily basis and in after hours planning. Eventually as these teachers adjusted to their new environments they managed to gain a new sense of control that involved abandoning their old need to tightly control their students' behavior and give them a greater degree of freedom to self-regulate. Reflecting on this process helped them to see how many dimensions of a learning space where involved in their daily negotiation of the contexts concerned.

Table 5-2 Degrees of teacher centredness of learning spaces from three sites

a. Teacher centred zone



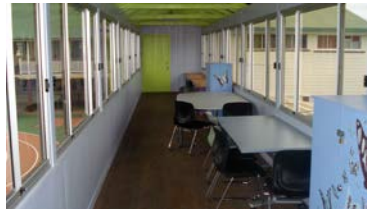
b. Intermediate zone



c. Teacher decentred zone



Table 5-3 Adjusting to refurbished learning spaces – new demands of teacher decentred spaces



There is considerable variation among teachers in terms of how tightly they seek to control the learning environment but the strategies used are typical. They just vary in degree. In one particular context where classes were overcrowded in small rooms in demountable buildings, I discerned tight control over student behavior and movement in order for the teacher to maintain a sense of order and avoid the stress that seemed to underlay having so many students in a small space. One particular teacher, when asked about what she would dream for if she had the opportunity to change her classroom, described a context that seemed much more relaxed and freer than how she operated at present. Crowding was having a major impact on her pedagogical approach it seemed. This teacher also expressed a philosophy that placed her as teacher at the centre of the educative process, however, there seemed to be a contrast between her ‘ideal classroom’ and what she currently had. This is reflective of the difficulty researchers have in trying to impute cause-effect relationships in complex people-in-environment contexts (Lackney, 2008).

Initial Codes: P12 at LCSS



P12C16 Set up of space more to do with behavior management – *“if I can get them behaving well then everything else fits into space.”* Being mindful of relationships and the social environment. Benefit from each other and learn.

P12C17 *“Get things under control and then eyes at me and then things go well.”*

P12C19 *My ideal classroom - Fun / bit competitive / feel like they are achieving something all the time – giving incentives. Goal sheets – maths, spelling, reading, health. Holistic – “push everyone along.”*

P12C20 *Learning needs to be fun for*

Field note: P12 at LC

Given what P12 says about what she would like in a learning space, I wonder if her focus on ‘behavior management’ isn’t influenced by the crowding in her room? Fewer students in a bigger space would afford more opportunity for innovation.

I also think of the transition made by P5 / P7 / P4 and P8 at SSS to new learning spaces and the way that they have been challenged pedagogically.

me to be fun for them.

In contrast to the situation at LCSS for P12, teachers at SSS where refurbishment of classroom spaces had taken place and where there was a lot more space for varied ways of grouping students and for different activities, teachers reported that students were far more relaxed and comfortable and this contributed to enhanced teaching and learning experiences.



Figure 5-1 Refurbished learning spaces affording student comfort and freedom to move.

There are high impact variables that influence behavior in the learning environment at any given time, and these can be quite unpredictable. Certain environmental variables such as temperature, daylighting, colour, odours, amount and type of furniture, and crowding can be loosely controlled usually. However, they can become high impact variables when they fail to be controlled. For instance, when an air conditioner breaks down, or when several new students are placed into an already full class along with the necessary furniture to accommodate them. Even having a student diagnosed with Autistic Spectrum Disorder, common in today's classrooms, can make the relatively benign element colour, into a high impact variable for that teacher, in that class, but in an unpredictable way. On the positive side, the number of computers in a class becomes a high impact variable when desktop computers are replaced by laptops or mobile devices, thus freeing up a lot of space which can then be used for other purposes. A situation where a small school gains new enrolments when they are at threshold levels, triggering the formation of two smaller classes from one large one, again, has a positive impact because of the freeing up of space.

Researcher Comment:

In the example below, P1 demonstrates the multiple considerations she makes in the establishment of an experiential learning centre in her classroom. She has had a computer sent to her that is not suitable, was a cast off from an upper grade and she was not consulted about it. It is taking up space and is not suitable for her student's needs.

She makes attempts to align her learning space with her philosophy of experiential child centred learning by bringing a fish tank and cash register. The curriculum goals she has for mathematics, social skills, communication, self-regulation, care for a living creature and science are all reflected in this learning centre. She needs to think about how it will be used so a roster is established.

Movement in and around the centre is an issue.

Codes that apply here include: philosophizing; pedagogical problem solving; making do; balancing competing demands; self-regulation; looking forward; using space as a pedagogical strategy; orchestrating learning.



P 2: Transcript of interview

And it had been moved, I had to move that because another computer came in which I'm not happy about anyway but um that's another story I'll get back to that. But originally I had set this up and it sort of went around the corner, I don't know if I've got one that shows, here, so that was actually coming around the corner there, this is the other computer that ended up having to put in cause the new one came to the room, that's an old one, I'm actually going to get rid of that, the children don't access it at all cause its so slow, so I'm not going to have it taking up that valuable space in the room just sitting there when there is other things that could be done. So before that was there I had this so you can see that's the shelf running off the end of that cupboard there and then around like that and I wanted to make a little like alcove sort of space cause the children were learning about pets so we made this the little pet shop and hence that's the cash registers and that sort of thing there. So I got a fish tank because and put fish in and make that's the feeding roster and that's because ... no better to learn than through real life experience...

P15 at LCSS reported that in her experience when teachers have more space the learning environment affords a greater variety of activities and is also calmer. Space has an impact on affect according to this teacher. A crowded space leads to more agitation and more teacher intervention to manage that. Teachers become more controlling in smaller, crowded classrooms. They become more teacher centred in their pedagogy and increase their concerns with shaping student behavior.

P15 C24 With more space you can have better management of groups – make different areas of the classroom for different functions – makes the space a lot calmer.

Refurbished space at SSS demonstrates the capacity of such space to afford the calm that was mentioned by P15 from LCSS:



Figure 5-2 Creating calm through learning space design

It is not only the available space that impacts on the way teachers manage it, and their students. A teacher's perception of the characteristics of the cohort they are teaching, impacts heavily on how they manage the space. P15 at LCSS quoted above, also commented that she had a difficult cohort of students with a number of them having behavioral and emotional problems. This influenced both how she used space and the pedagogical approach she implemented. On the one hand she indicates that more space has a calming effect but if a cohort is challenging, then more space could have the opposite effect.

P15C1 Students with behavior difficulties – *“doing things outside would be harder to control, need space inside to separate children”* (predicting challenging student behavior influences the use of space and planning).

P7 from SSS made similar comments about her class and how this affected relationships, pedagogy and management of space. She reported being very anxious about taking her class into a newly refurbished learning space with so many different options for grouping, different furniture and arrangements, and a generally less formal feel to it.

P7 Interview transcript

With these guys this group was cast in the school in Grade 5, when they came to me I had a very structured and very formal, very rigid classroom because they had taken the boundaries that far that the boundaries needed to be so tight that when I first started, they had no room to breathe and I gradually let them out again. This is not something that I would have done with them 12 months ago. I wouldn't have done it lightly but since moving into the room they've done they've adapted really well. (Referring to new classroom space.)



P7ph7



P7ph11



P7ph10

When teachers perceive that their students as a cohort are 'difficult', potentially non-compliant, lacking in self-regulation and easily distracted they tighten up on the management of space and movement within it. This is associated with a narrower range of pedagogical strategies being applied with greater use of teacher centered and direct teaching methods. The potential result is a more stressful environment for all concerned. How one perceives stressors in the environment and the type of response, is dependent on many factors. One's sense of agency in an environment, or capacity to control stressors is an important factor in being able to cope.

For instance, P7 from SSS in the example above perceived her class as pushing beyond reasonable 'boundaries' of behavior and this for a teacher is threatening at a number of levels. It interferes with the learning agenda overall and with individual's learning. It can make the teacher feel inadequate compared to her peers whose

classes may be calmer and more orderly. It challenges the teacher's sense of control over her environment. The response reported by P7 was to increase control measures and deny students the opportunity to get off task or engage in conflict with peers. This tightening of the boundaries helped P7 to return to a homeostatic state where she felt more in control and therefore less stressed.

Paradoxically, this behavior can be counter-productive in terms of a more progressive learning agenda and one that helps to develop self-regulation in students. Self-regulation is highly valued by teachers from early childhood to senior school and the teachers in this study reported this to be a factor in how they managed learning environments. Different types of physical settings influence behavior and either afford or restrict opportunities for developing self-regulation in students. P7 responded to her class by tightening the boundaries as did P12 at LCSS but the long-term impact of this is fewer opportunities for self-regulation if the teacher doesn't do, as P7 reported she did, "let them (the boundaries) out again"(from interview transcript). These boundaries can be both social and physical. That is, tangible and intangible. Restricting access to certain spaces is one way to make boundaries visible. Increasing or reducing surveillance by teachers is another.

Complexity in the environment makes demands on those who occupy it. Primary teachers are at once occupants of the learning space, and they also have sanctioned agency in that space, to maintain and manage it, for and with other occupants (in the main, students). The initial and focused coding processes I used to make sense of the patterns inherent in the data, reveal the degree of complexity, as reflected by the examples above.

Coding as a grounded theory method is the beginning of the theory building process. The constant comparative process is applied in the act of coding and continues throughout the coding process. I did not apply any coding paradigm or framework to the data. I examined the transcripts of interviews closely, and searching for patterns, I then named these patterns as codes. The process involved comparing incidents to incidents in the transcripts, and then across transcripts to generate patterns of initial codes that were again named.

Table 5-4 Constant Comparative Process of Data Analysis

		PARTICIPANTS								
		P1	P2	P3	P4	P5	P6	P7	P8	P9
C O D E S		*	&	+						
		@	*	&						
		#	@	*						
		\$	*	*						
		%	*	&						
		*	&	%						
		*	^	\$						
		^	#	#						
		*	#	\$						
		^	@	#						
		@	*	@						
		\$	*	*						
		\$	%	&						
		@	*	@						
		*	^	^						
		*	%	&						
	%	\$	@							
	*	#	*							

The symbols represent incidents in the data that are coded, or at the next level of analysis represent codes that are lifted to higher order categories. In this example, * might represent a pattern of incidents named 'Zoning', which is the process teachers use for creating bounded spaces in a classroom for specific activities. 'Zoning' could belong to a set of categories named 'Pedagogical Problem Solving' which itself belongs to the category named 'Orchestrating Learning'.

The initial coding process generated many codes but the process of constant comparison allows the initial sets to be reduced to more abstract and inclusive ones. The process also generates properties of codes as a matter of course. For example, I used a metaphor to graphically display the codes for individuals. This metaphor also allowed me to easily compare codes and their properties across participants. The metaphor used a diagram of a tree to represent the context the participant was reflecting on, the substantive field (design, maintenance and management of learning spaces) and the codes and their properties that were generated from the transcripts. I was looking for a way to visually represent the data and to organize it so that I could better engage in the conceptualization process. I subsequently returned to the data coding process to refine my handling of it and verify or expand on my initial attempts. However, the initial process proved quite robust as a representation of the complexity that teachers were forced to deal with on a daily basis as part of their workflow. It also afforded me a representation of my conceptualizing to this point, as I looked for patterns in the data that indicated possible categories that could account for how the participants resolved the main concerns they held, in relation to the substantive field being investigated. I demonstrate the process by which I ascertained the main concerns of participants below. Glaser (1967; 1992) draws on the work of Paul Lazarsfeld to describe conceptualizing categories in a grounded theory study, as a form of latent structure analysis. I adopted a view that as researcher I was

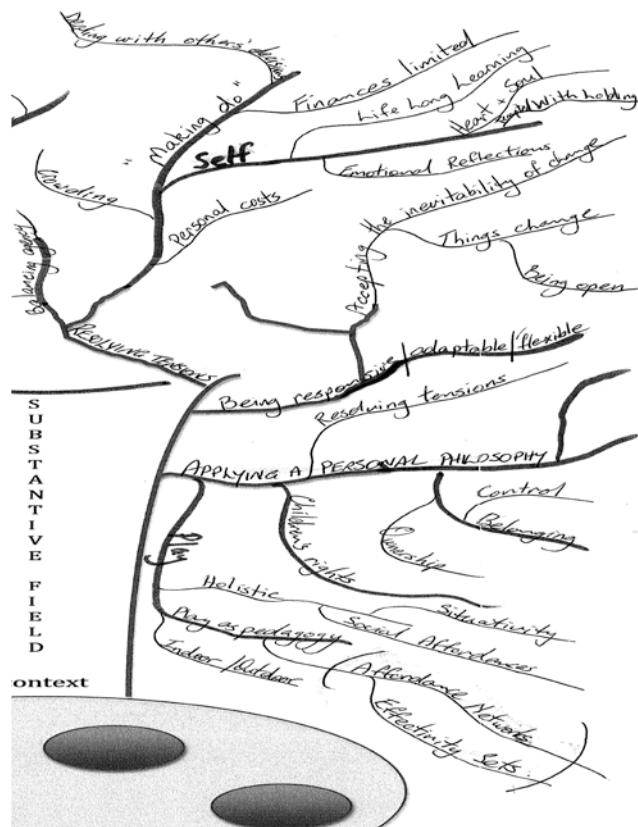


Figure 5-4 Section of 'tree' of codes P2

In Figure 5-6 my initial attempt to give some order to the data is apparent. Coding is a conceptual process as well as a pattern finding one. Categories evolve over the life of the project as more data is collected, coded and subjected to the process of constant comparison. The branch of the tree labeled: Applying a personal Philosophy, later became the concept philosophising that is a property of the category pedagogical problem-solving that is a property of the category orchestrating learning. Likewise, the branch self, became a lead to the category maintaining personal and professional identities. I also considered philosophising to be a property of the category, maintaining personal and professional identities. The building up of categories from the initial coding process occurs as more data from participants begins to fit a pattern that is then named.

An example of a full initial coding set, generated from a transcript of an interview follows. The reader will note the use of verbs indicating that the codes were process focused and were generated by constant referral to the question, "What is the participant doing here?" I have followed the advice of Charmaz (2006) in this regard.

P3 (GSS) Initial Codes P= participant; C= code

P3C1 *Delineating* use of space

P3C2 *Commenting* on statement about personal /professional reflection

P3C3 *Describing* children as restless and needing frequent change

P3C3.1 *Utilising* outdoor spaces deliberately to lengthen attention spans in preparation for high school

P3C4 *Utilising* vacant spaces for reading groups

P3C5 *Needing* to be able to see the children at all times

P3C6 *Starting* lessons in classroom then moving outdoors

P3C7 *Moving* back inside to do a synthesis phase of the lesson.

P3C8 *Appreciating* outdoor learning spaces for the relaxation affect on children.

P3C9 Participation improves outdoors

P3C10 *Reflecting* on how children respond positively to being outdoors

P3C11 *Acknowledging* that classrooms can be threatening for some learners.

P3C12 *Allowing* cushions for comfort

P3C13 *Encouraging* group formation

P3C14 *Describing* outdoor spaces as non-threatening and non-academic but promoting engagement

P3C15 *Demonstrating* caring and nurturing

P3C16 *Sharing* power

P3C17 Space that provides a cool breeze

P3C18 Space that is private and away from scrutiny of authority affords more self confidence

P3C19 *Developing* social skills through a curriculum intervention

P3C20 Children used different learning spaces as modeled by teacher

P3C21 *Introducing* a homework program

P3C22 Teaching reflective process

P3C23 *Sharing* power

P3C24 *Being adaptive*

P3C25 *Negotiating* curriculum elements with students

P3C26 *Addressing* issues of where learning takes places

P3C27 *Allowing* children to experience what it is like to be the 'teacher'

P3C28 *Asking* for permission to have door open for access to outdoor space

P3C29 *Accessing* classroom via alternative door avoids going near office area

P3C30 *Using* internal staircase as a space for working

P3C31 *Using* cushions for comfort

P3C32 *Accessing* a 'nook' 'secret garden' for learning how to observe

P3C33 *Valuing* the positive affects of the garden space for learners.

P3C34 *Providing* a variety of spaces

P3C35 *Using* outdoor spaces to resolve complaints about not having enough space.

P3C36 *Describing* an art lesson in an outdoor context

P3C37 *Describing* children's positive reaction to writing in an outdoor context

P3C38 *Describing* that she is responsive to children's moods

P3C39 *Describing* impact of weather

P3C40 *Describing* aesthetic qualities of some spaces

P3C41 *Comparing* school spatial resources - crowding versus room to move

P3C42 *Describing* students as having personal space 'issues' - need for more space than normal.

P3C43 *Describing* self as being experimental

P3C44 *Describing* children as adaptable

P3C45 *Being different*

P3C46 *Helping* students to understand difference in teaching styles

P3C47 *Explaining* the importance of context

P3C48 *Describing* children's attraction to a private spot

P3CK49 Not being observed / watched

P3C50 *Relating* back to children's lives out of school

P3C51 *Acknowledging* classroom as more formal space

P3C52 *Describing* the sandpit as a learning space

P3C53 *Linking* to curriculum knowledge

P3C54 *Observing* that children love to play in sand

P3C55 *Linking* sandpit activities to technology unit

P3C56 *Describing* furniture as functional

P3C57 *Describing* chill out areas designed by children

P3C58 *Providing* activities for children to use in chill out area

P3C59 *Making* the area comfortable.

P3C60 *Setting* time boundaries

P3C61 *Setting* boundaries for use of the chill out space

P3C62 *Encouraging* self regulation

P3C63 *Acknowledging* the impact of family life on children

P3C64 *Using* an area for rest and sleep

P3C65 *Describing* furniture as functional

P3C66 *Describing* chill out areas designed by children

P3C67 *Providing* activities for children to use in chill out area

P3C68 *Making* the area comfortable.

P3C69 *Setting* time boundaries

P3C70 *Setting* boundaries for use of the chill out space

P3C71 *Encouraging* self regulation

P3C72 *Acknowledging* the impact of family life on children

P3C73 *Using* an area for rest and sleep

P3C74 *Describing* wet area function - not used often

P3C75 *Expressing* preference for doing creative type art rather than painting

P3C76 *Describing* art program

P3C77 *Using* outdoor spaces for doing art program each day.

P3C78 *Making* children aware of factors influencing performance - position,

light,

P3C79 personal factors and environmental factors.

P3C80 Establishing a criterion of ease of mobility for furniture placement.

P3C81 Managing the choices children make for sitting in groups.

P3C82 Establishing boundaries for choices

P3C83 Describing additional space used for learning activities

P3C84 Moving computers to make more room

P3C85 Making it easier

P3C86 Integrating use of electronic whiteboard with computers

P3C87 Managing groups of learners

P3C88 Providing opportunities to develop group work skills

P3C89 Having appropriate height desks for different developmental and physical characteristics of children

P3C90 Experiencing a different feel to a space

P3C91 Considering information about students to help decide on how to set up a classroom initially

P3C92 Taking notice of problematic relationships in small schools

P3C93 Intending to focus on social skills for first two weeks of year

P3C94 Using negotiation as a core pedagogy

P3C95 Affording students a sense of agency

P3C96 Acknowledging diversity and individual differences

P3C97 Acknowledging improvements in academic performance

P3C98 Describing different aspects of space that impact on student performance.

P3C99 Space can be about the type of book a child has to write and draw on.

P3C100 Applying counterintuitive pedagogy through space

P3C101 Describing a space as cold and uninviting, bare and stark

P3C102 Avoiding using a space for teaching because of its feel

P3C103 Providing access to play equipment through the curriculum

P3C104 Providing access to play equipment that is out of bounds for older children

P3C105 Being spontaneous

P3C106 Having fun

P3C107 Being aware of the need for comfort to support teaching

P3C108 Being aware of the need for comfort for effective learning

P3C109 Being organized

P3C110 Using open space for relaxation recreation at home (teacher's home)

P3C111 Acknowledging the importance of a sense of space in life

[Initial codes derived from analysis of the P3's interview transcript](#)

The initial codes I generated tended to be highly descriptive and many in vivo codes were evident. By continually comparing code to code within and across participant data sets, I generated a reduced, yet denser set of codes, which I again continued the process of constant comparison with, until four substantive categories emerged. These categories are described in Chapter 6 as representations of teacher strategies for resolving their main concern. The early sets of codes, however, demonstrated the high degree of complexity of the environments that participants dealt with on a daily basis.

Environmental complexity can be examined through identifying its dimensions. Vischer (2008) used a graphic to demonstrate the dimensions of functionally comfortable workspaces. I have drawn on this idea to generate the dimensions of learning spaces from the data provided by participants in this study. This corresponded with the process of raising the initial codes to a higher level of abstraction through the constant comparative process applied across participants.

For instance, P3's set of initial codes (111) was reduced to ten sets of codes that represented patterns of teacher behavior or concern.

- Defining and using spaces
- Responding to children's characteristics through use of space. (Maximising Productivity / Minimising Distractions)
- Valuing outdoor spaces
- Developing connection through relationship / being responsive
- Managing groups
- Pedagogical Problem Solving
- Quality of relationship with children
- Qualities of space
- Promoting self regulation
- Looking forward

These ten sets were later renamed and reduced further after comparison across participants occurred. This initial set of ten, along with similar sets for all the other participants, reflects the process whereby I was able to develop a conceptual framework that identified the major dimensions of the learning space environment. By considering the other participant's sets of focused codes in conjunction with P3's and each others, I generated the following map of the dimensions of learning space environments as seen by this group of primary teachers who design, maintain and manage them as part of their daily workflow. Each dimension is a context for decision making on the part of the teacher.

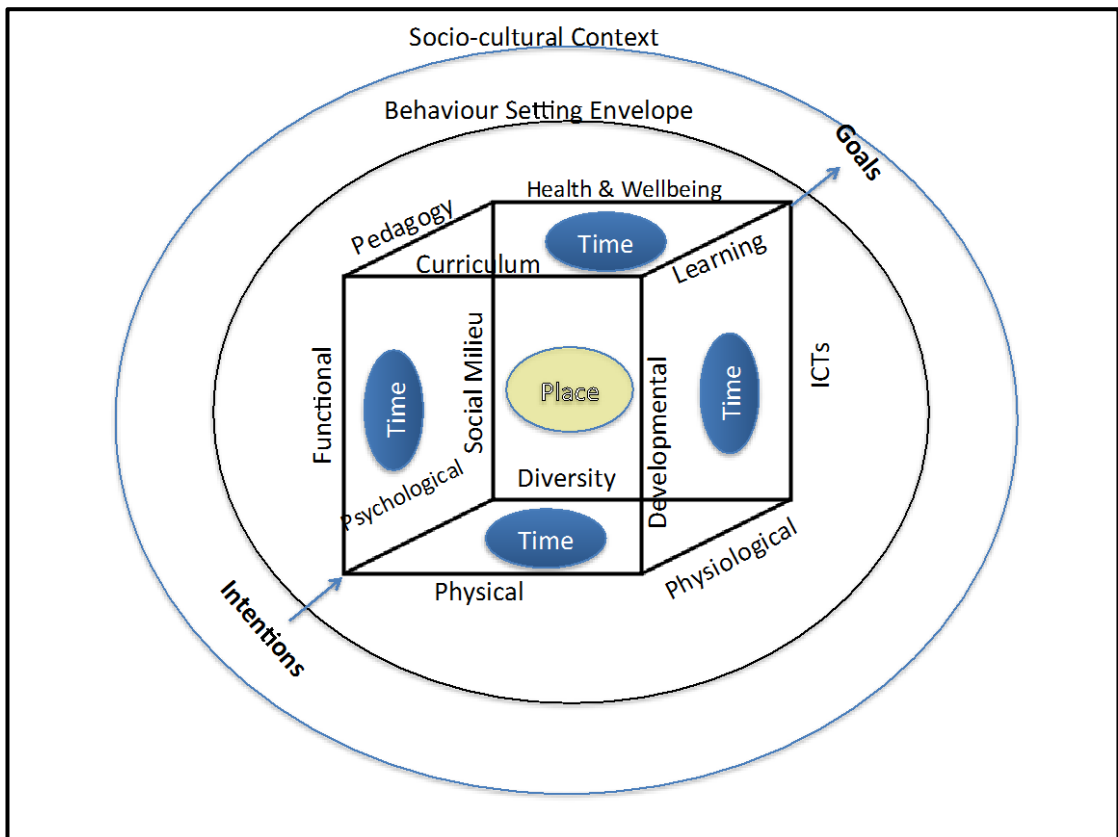


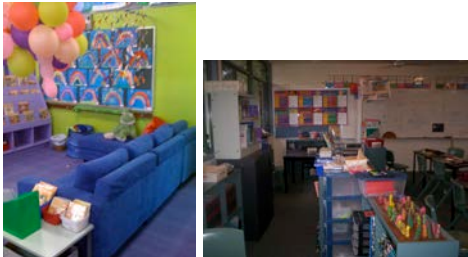

Figure 5-5 Concept map of complexity in learning spaces.




The concept map provided above represents a partial view of the complexity of the learning space environment as reported on by participants in this study. It cannot be a complete representation of the subjective experience of learning spaces. Any representation based on a particular data set is limited due to the nature of the data itself being only a conglomeration of thoughts expressed in language and transformed through the recording, transcribing and analytic processes. Further, the diagram does not imply any priority to the dimensions included, or cause-effect relationships. It is merely a graphical display to represent salient dimensions of learning space complexity, as experienced by a group of primary teachers, and that are grounded in the data being analysed in this study. On a daily basis, primary teachers embedded in the transactional context of learning spaces respond in real time to multiple contextual dimensions in a flow of action, feedback, adjustment, feedback, adjustment. This is not a linear process. It is recursive and only partially predictable. The learning space context and those occupying it is subject to stochastic

processes. There is a degree of randomness in complex systems (Becvar & Becvar, 2003)

The following table provides an elaboration of the dimensions included in the graphic. Some dimensions are tangible, physical, concrete, while others are intangible, dynamic, relational and pedagogical.

Table 5-5 Dimensions of complexity in learning spaces

Dimension	Examples
<p>Functional The functional dimension refers to those aspects of the learning environment that influence how occupants access the space, move around within it, access resources, realize the affordances of objects such as furniture and learning aids. This dimension includes storage spaces, the ways that walls impede or facilitate movement or create spaces for particular activities. It also includes elements that the teacher perceives as either facilitating or hindering them in their pedagogical activities.</p> 	<p>accessibility; access to resources; storage – resources, student personal effects; furniture – type, size, function, ergonomics; mobility of students and of teacher – traffic patterns; flexibility of configuration of furniture; active versus passive wall space.</p>
<p>Physical The physical architecture of a space.</p> 	<p>Size of rooms; windows, glazing, ceiling height; fans, air-conditioners, heaters; exits and entries, stairs, vistas; shape of rooms; type of lighting – daylighting, artificial lighting; traffic patterns</p>
<p>Physiological Those factors that impact on the physiological functioning of individuals. Certain environmental variables are high impact for some but not for others.</p>	<p>Lighting – daylighting, artificial lighting, florescent, incandescent, adjustable or static, wall or ceiling mounted or both, cool or hot; colour – of walls, floors, furniture fittings; smell; temperature; air quality; crowding; distraction;</p>

<p><i>P3 Even desks are threatening for some children.</i></p> 	<p>sense of comfort; spaces for quiet; withdrawal spaces; vistas; ambience or atmosphere (formal to informal); acoustics</p>
<p>Psychological Factors that impact on the subjective experience of being in time and space and that impact on cognition, affect and behavior.</p> <p><i>P3 Improving attention span by using outdoor spaces</i></p> 	<p>Opportunity Self-regulation / Self-determination; Motivation / Choice; Connection / Belonging; Affect; Cognition; stimulation; territoriality; personal space; security; Stressors; Sense of control</p>
<p>Social Milieu Factors that impact on how people relate as social beings in the context of space and time.</p> <p>Establishing a sense of belonging to a social group.</p> 	<p>Positioning of furniture to allow face-to-face communication; provision of spaces for small group work and collaborative activities; spaces that guide interaction; signs of belonging to a social group.</p>
<p>Individuality / Diversity Factors that represent diversity as inherent in the space.</p> <p>Factors that enable responsiveness to diversity.</p>	<p>Inclusion; learning preferences; education support needs; social emotional wellbeing; class culture /ethos /climate; provision of spaces within spaces; accessibility to space /curriculum</p>

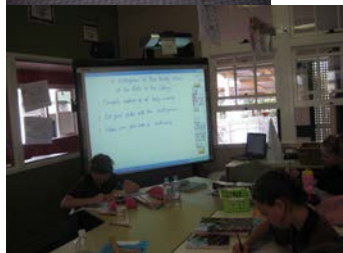


Developmental
Factors that demonstrate developmentally differentiated design and use of space.






Size of furniture; height of shelves; access to display space; access to learning materials; provision of concrete learning materials; access to outdoor spaces; use of sandpit and play equipment for learning; access to technology for production (reprographics; data projection; internet); toilet access with supervision – eg. Built into learning space (en suite style)

Technological
Technological enhancements to communication; presentation; learning activities; information management.



Integrating ICTs into teacher pedagogy; motivating student engagement through use of ICTs; promoting student use of ICTs for learning; use of mobile devices; provision of mobile versus desktop computers; cabling; power access; ICTs integrated into space versus use of computer lab space.

<p>Curriculum Environmental variables that provide access to the curriculum for both students and teachers (pedagogical aids). In some sense, the space itself is pedagogical.</p> 	<p>Presence and access to teaching and learning aids and resources; storage access; displays of student work and reference charts; specific spaces set up for curriculum related activities; wet areas; art tables; performance space; presentation space</p>
<p>Learning Learning outcomes is a main concern of teachers. Teachers must consider many possible variables in the environment that can impact on learning outcomes. These are both tangible and intangible. They also vary for individuals.</p> 	<p>Comfort factors: furniture, writing surfaces, crowding, grouping, mobility, time of day, temperature, energy levels, hydration. Communication factors: getting and maintaining student attention, teacher position and movement, proximity, acoustics, ambient light when using projectors, glare Relational factors: monitoring on-task behavior, redirecting, providing support, encouraging</p>
<p>Pedagogy Different spaces afford different pedagogical approaches.</p> 	<p>Teacher centered: explicit teaching, presentation (<i>Ps 4, 5, 7 all mentioned having to find where to stand in the learning space to get maximum student attention and have everyone hear them</i>) Inquiry learning /project learning /collaborative learning / independent research require space and flexible furniture configurations 'Zoning' is used by teachers to set</p>



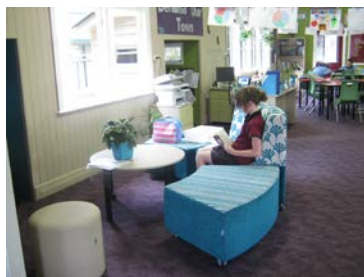
up semi-static spaces to enable different pedagogical activities.

Wellbeing / Health
The physical, psychological, relational, and spiritual dimensions of wellbeing can be supported by environments.



Certain environments can be stressful: crowding, lack of opportunity to move, constant surveillance, hot, humid, dark, smelly, run down spaces work against wellbeing.
Access to cool drinking water; air-conditioning; refrigeration for food; cleanliness; regular maintenance of facilities.

Place
Creating a sense of place, something unique, welcoming, stimulating, and where a sense of belonging (attachment), dependence (needs met) and identity (sense of self in context of space and time) are promoted.



Signs and symbols of the class identity; display of student work; personalization of aspects of class space; strategies for giving choice (eg. Learning centres); facilitating a sense of ownership by students (students participate in classroom design)

Time

Establishment of routines, rhythms, and predictability in the time bounded order of the school day.



Schools are dominated by time. Each teacher has to negotiate time in their own way, but within the context of whole of school and community time demands and constraints.

Before school time; morning session; middle session; afternoon session; play time; home time; bus time; silent reading time; specialist lessons e.g. swimming, team sports; library; music; religion.

Complexity forms the background context out of which teachers must make constant adjustments to their behavior in order to achieve their intentions, maintain a sense of control, manage stress and achieve homeostasis. As the learning space environment is in a continual state of change, some of it managed and some not, teachers have their attention drawn to various aspects of the environment moment to moment, as high impact variables emerge from the background of complexity and then recede again as others emerge requiring attention.

The complexity of the learning space environment is compounded by its dynamic nature. In real time, teachers are required to respond to multiple environmental cues, while at the same time moving towards their goals. Additionally, though any particular learning event, bounded by time and space, may be facilitated by a teacher, whose primary goal may be curriculum-learning based, other longer-term goals are being monitored simultaneously. This is evident in codes such as: looking forward and promoting self-regulation. Primary teachers are not only teaching a class for their particular context. They also hold in mind the student in future contexts. Future learning contexts are perceived as placing increasing demands on students for self-regulation. They are portrayed as being less supportive of students in terms of guiding organization and learning. This is particularly so of the primary to secondary school transition context. However, the effect is no less apparent in early childhood contexts where teachers are concerned with promoting growth in terms of self-regulation in behavioral, learning and emotional terms. The code looking forward reflects this concern.

In summary, the complexity of the learning space forms a canvas upon which the occupants of that space must contend in order to achieve their intentions. Data from this study supports the contention that primary school teachers have multiple intentions as they design, manage and maintain learning spaces as part of their daily workflow. This study demonstrates that the participant teachers were well aware of this complexity and that they saw the learning space holistically as a fluid, dynamic

environment in which various dimensions demanded attention at various times. Some of the dimensions of complexity could be planned for while other dimensions required more spontaneous responses as they emerged from the canvas of potential that formed the learning space milieu.

5.4 Identifying the main concern

Having established the contextual complexity inherent in learning spaces as described by participants, I set about searching for a way to identify the main concern of participants as they exercised their agency in designing, managing and maintaining learning spaces as part of their daily workflow. Grounded theory methodology as applied in this study seeks to account for how participants in a substantive field of behavior resolve their main concerns as they go about living in that field (Glaser, 2011). From this perspective, the main concerns are resolved using social-psychological processes that are evident in the codes and categories that are generated from the data.

I found the process of identifying participant’s main concern difficult to do for quite some time. It seemed to me that the participants had many concerns due to the complexity of the environments in which they worked. Additionally, when talking about their experiences they referred to many aspects of the environment, not just the physical. They saw the environment holistically and referred to many dimensions of it from the psychological to the social to the physical. I had to review the data from a number of different angles and in different ways in order to finally resolve this issue for myself. The process I applied was to listen to the taped interviews in full again and take notes as I listened for an overall concern. This listening had a different quality to that used when coding. I was conscious of my intention to hear what participants were saying about their desires for the learning spaces they occupied.

The notes closely reflected my initial coding process, which isn’t that surprising, but the process enabled me to articulate what I thought was a synthesis of the individual participant’s intentions in relation to learning space, from what they reported through the reflexive photo-elicited interview. These synthesis statements then helped me to construct a global statement or main concern for primary teachers to be resolved as part of their daily workflow. This is really a brief description of what, in reality, was a long process of reflection on how the data revealed a main concern for participants.

Table 5-6 Example of statement of main concern for P6 and researcher notes

P6 from SSS	Synthesis Statement
	<i>Creating a multidimensional space in which young people can learn to self-regulate, learn self management skills, interact with a diversity of peers who can be challenging, develop strategies for coping, resolve conflict and engage in learning in creative and innovative ways using new and old technologies.</i>
	Notes taken on review of audio recording of interview. These formed the basis of the summary statement above.

	<p>Making adjustments to a new space. Tables only allow for group arrangement. Chair bags. Seat allocations on a weekly basis – boy/girl arrangements. Negotiating individual spaces. Changing design until I know they are settled. Having a focal point and then splitting up into group learning activities. <i>“It was really hard”</i>. Getting ready for High School. Got to learn how to ignore distractions. Learning how to work in groups. Different spaces for different learning situations – red room / blue room – glass panels for monitoring student behavior.</p> <p><i>“Not letting the room control me” “Felt restricted with the way I could be creative”</i> – need lots of visual displays of children’s learning. Compromised by using nets for attaching items for display. Using window space for display.</p> <p>Benefits of classroom for transitional phase to high school. Space affords teacher opportunities to afford students opportunities to learn about how to manage themselves as learners in a secondary school setting. (Looking forward)</p> <p>Living the values – personal responsibility.</p> <p>Parent feedback on children’s improved management of self at home.</p> <p><i>“Focal point teaching”</i></p> <p>Quiet space for reading. Quiet breakout space for working. Photocopying facility. Filming and photos – ICTs Interactive whiteboard – for teacher and student use. Movable whiteboard – double sided. Morning sessions – drama- movable stage – stage is important for building self-confidence. Provide the props and space and the behavior follows. Chillout space – bean bags / private</p> <p>Outside spaces – for specific learning topics. Use of stadium – stage for speeches. Fitness and games Swimming pool. Excursions – to Brisbane</p> <p>The classroom space affords opportunities for social maturity. <i>“Teambuilding exercises”</i>. Resolving conflict – using strategies and language.</p> <p>Lots of self-regulation going on in this classroom.</p> <p>Sensing / reading a student’s mood or problems and pre-empting behavior problems – using the quiet space as time out (Self-regulated).</p>
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	<p>The space and its design has given me opportunities to do things that I wouldn't do in another space.</p> <p>Less need for control (teacher) – need to learn how to cope with messiness (children).</p> <p>Challenges for teacher – teaching concepts and having students apply the concepts in a more self directed way with reflection.</p>
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Table 5-7 Full set of synthesis statements of teacher participants

P1 (MSS)	Creating an engaging, accessible, flexible space that reflects a philosophy of children learning from each other through guided collaboration and through naturally emerging purposeful relationships.
P2 (MSS)	Create a learning focused space allowing for the use of multiple ways of teacher / student interaction, student / student interaction and student learning materials interaction, which create a learning focused space allowing for the use of multiple ways of teacher / student interaction, student / student interaction and student learning materials interaction, with multiple accessible spaces affording teacher direction and monitoring of student engagement.
P3 (GSS)	Creating an emotionally safe space where children feel safe to take risks in learning and can learn to self-regulate with the guidance of a caring adult.
P4 (SSS)	Creating an interesting and enlivened space that affords innovative, project based curriculum and learning, and that encourages a sense of belonging to a community of learners who value each other's unique talents and ways of expression.
P5 (SSS)	Creating a learning space with multiple sites that students are able to choose to engage with in order to be able to complete learning tasks. This space affords teachers opportunities for ongoing professional learning as well as opportunities for students to engage in learning in social groups, as individuals, and in teacher directed groups.
P6 (SSS)	Creating a multidimensional space in which young people can learn to self-regulate, learn self management skills, interact with a diversity of peers who can be challenging, develop strategies for coping, resolving conflict and engaging in learning in creative and innovative ways using new and old technologies.
P7 (SSS)	Creating an explicitly bounded learning space that provides maximum access for teacher to students, students to teacher and students to each other in the support of learning. The space should allow for multiple learning sites that offer different learning affordances. Furniture and teaching aides should be mobile to afford high levels of flexibility and ease of reconfiguration and access.
P8 (SSS)	Creating a space in which a diversity of children can relate to each

	other and learn from those relationships, that is friendly and welcoming to demonstrate to children that they are valued and worthy of adults time and energy, that is designed with the characteristics of children in mind, and that affords accessibility to a full range of learning experiences for all students.
P10 (LSS) P11 (LSS)	To intentionally use available space to support the development of a social and learning milieu that values self-determination and autonomy as collective and personal motivators to engage in authentic learning. (A milieu comes from the French - mi (mid) + lieu (place)) Space as a motivator.
P12 (LCSS)	Creating a well-ordered space that focuses students on learning that is orchestrated by a motivating and animated teacher concerned with achieving outcomes for every student.
P13 (LCSS)	Creating a multisite learning space with flexible boundaries that makes use of indoor and outdoor spaces, promotes experiential play-based learning opportunities as well as structured teacher directed learning events. The space encourages learning social and emotional skills along with academic skills that prepare children for more structured learning environments in the future.
P14 (LCSS)	Creating a preferably self-contained learning space where open ended, group tasks can occur and where students can learn from each other as well as from a motivated teacher who encourages individuals to pursue excellence in what they do. This space should be technology enhanced to afford different ways of presenting information for different learning styles and levels of achievement.
P15 (LCSS)	Creating a safe, well ordered space in which children can learn and have their individual learning and emotional needs attended to by a teacher who is active, engaged and consciously present to her students. Children in such a space feel secure and valued.
P16 (LCSS)	Creating a structured space with multiple sites of activity that afford regular change from one type of learning context to another to account for developmental characteristics and individual differences, but also provide a predictable environment for children. Providing many visual cues to enhance learning opportunities and making use of technology to motivate and enhance learning.

My final synthesis of these individual statements or main concerns in relation to designing, managing and maintaining learning spaces is as follows:

Creating complex multi-faceted / multi-purposed spaces that shape, afford and optimize creative learning and teaching behavior, pro-social interactions, a positive contribution to identity, and having a particular focus on the learner as a self-regulating individual in a social context.

The focus of this statement is on the learning space as more than a container of human activity. It is considered to be an important facilitator or shaper of human behavior and provides both constraints and affordances for behavior. It is worthy of note that a constraining dimension of an environment is in itself an affordance. I am using the term ‘affordance’ in the context of teacher’s main concerns as meaning, those features of an environment that enable learning in its broadest sense to take place. Teaching is a complementary set of behaviors that match learning behaviors in a loose or tight way depending on many factors in a dynamic context. Teachers are concerned with creating spaces in which they can operate, according to their interpretations of their roles as teachers, to facilitate learning.

The synthesis statement addresses the complex multi-dimensional nature of learning spaces, the purposeful or intentional shaping of space, and the interaction of occupants in the spaces, as they engage in those behaviors that we refer to, in mainstream Western culture as teaching and learning. The methodological function of the main concern statement is the delimiting of the study to seeking an account of how participants go about resolving this concern through social and psychosocial processes.

5.5 Summary

Chapter 5 presents in a reflexive style (Frost, 2011), the analytical process and findings that established the complexity of learning spaces as perceived by participants and their main concern in relation to their role in designing, managing and maintaining learning spaces as part of their daily workflow. In brief, the findings of Chapter 5 were that rather than seeing the issues of learning space design, management and maintenance as being a set of decontextualized processes, participants indicated that the complexity of the learning space was multi-dimensional and systemic. The accounts of their subjective experiences, and reflections on learning space as part of their daily workflow, demonstrated how teachers must operate in a complex and fluid environment that represents a transactional unity (Werner & Altman, 2000). All of the dimensions of complexity in the conceptual framework that was generated from the data, are present in real time interactions. Teacher attention to dimensions is fluid and constantly in flux. Each dimension is tied to the other dimensions through processes of mutual shaping and multiple cause-effect relationships of a recursive nature.

The physiological dimension provides an example of this systems oriented perspective. It includes intra-individual responses to person-in-environment transactions. These responses can manifest as changes to heart rate, blood pressure, blood sugar level, hormone release and gustatory processes. Such changes in individuals impact on cognitive processes such as attention and problem-solving, as well as affective and behavioral responses. That is, the physical, psychological and behavioral dimensions are inextricably linked.

Individuals in a learning space are part of a social milieu. Changes in individual behaviors influence the behaviors of others occupying the same space with feedback to the individual whose physiology is once again influenced. The

original physiological changes may have been triggered by something in the physical environment but the ripples soon reach the social level and may require intervention by a teacher at multiple levels: pedagogical, curriculum, exercise of behavioral interventions, or even highly intrusive interventions such as removing an individual from the environment, or adjusting the physical environment to afford opportunities for an individual's physiology to return to homeostasis. All of this takes place within the context of the learning space and in the context of time. Everything is always embedded in space and time.

The second finding dealt with in Chapter 5, was the articulation of the main concern of participants as they engaged with learning spaces as part of their daily workflow. Having demonstrated the complexity and dynamism of the learning space environment, it was clear that teachers must resolve a number of concerns that they have as a result of this. Concerns are considered here as response to environmental demands. A number of codes generated in the data analysis indicated possible concerns: balancing competing demands, maximizing productivity through minimizing distractions; realizing affordances; aligning the environment with personal philosophy; being some possibilities. In each case, the code accounted for variability in teacher behavior. How one teacher acted to balance competing demands may be very different to all the other teachers in the study. Yet, collectively they were all engaging in balancing competing demands.

With so many candidates as a main concern emerging from the data analysis, I undertook a process to determine a statement of the main concern that was as inclusive of the individual codes as possible. The process used is described in detail in in this chapter. The main concern to be resolved by primary teachers in this study is hypothesized to be:

Creating complex multi-faceted / multi-purposed spaces that shape, afford and optimize creative learning and teaching behavior, pro-social interactions, a positive contribution to identity, and having a particular focus on the learner as a self-regulating individual in a social context.

The main concern is, multi-dimensional. Unpacked, it includes physical, educational, social, and intra-individual dimensions that continually operate as a transactional unity. This finding is foundational to the findings reported in chapter six, as the categories presented there, demonstrate how participants, through the action of four substantive categories, resolve the main concern.

The identification of the context of complexity and the participant's main concern enabled the analytical process to proceed. The main concern delimits the study and is considered to transcend the particulars of people, time and place. That is, it is treated conceptually rather than as a description of situated behavior. Once the main concern is established against the context of complexity (that transcends particular contexts of situated learning spaces), it is possible to continue the analysis to determine theoretically how participants resolve the main concern. This is the purpose of Chapter 6.

Chapter 6 presents in a reflexive style (Frost, 2011) the ongoing analysis of the data and its yields. It presents four substantive categories grounded in the qualitative data, that theoretically account for the ways that primary teachers resolve their main concern in relation to the substantive field. These four categories account for variation among individuals. That is, judgments about what is best practice, or what

is less or more effective are not part of this research. Teacher A is hypothesized to engage in orchestrating learning as are all primary teachers. How each teacher orchestrates learning to achieve learning outcomes is not a concern of this study. This study hypothesizes that orchestrating learning is a category of teacher's attempts to resolve their main concern in relation to the research questions. Teachers vary incredibly in the ways they go about orchestrating learning. I hypothesize that in orchestrating learning all teachers engage in pedagogical problem-solving, in zoning and in other activities that are properties of the category orchestrating learning. They will necessarily vary considerably in how they actually go about these processes.

The four substantive categories presented as products of the analysis presented in Chapter 6 are:

- Maintaining personal and professional identities and roles
- Orchestrating Learning
- Being in and maintaining relationships
- Being in space and time

Chapter 6: Four substantive categories account for the ways that primary teachers resolve their main concern

6.1 Introduction

This chapter is written in the reflexive style (Frost, 2011) and explains how the four substantive categories that account for how primary teachers resolve their main concern in relation to the daily design, management and maintenance of learning spaces, were developed. The introduction provides an overview of how the substantive categories were generated through the analytical process before introducing each substantive category. The categories are described in terms of their function and examples are provided from the qualitative data to ground the theoretical in the empirical.

The category, maintaining personal /professional identities and roles is dealt with in detail to demonstrate more fully how the categories were developed through the empirical data, sensitizing concepts (Birks & Mills, 2011; Charmaz, 2006; Kelle, 2010) and reflexivity. The chapter finishes with a section on how the substantive categories operate to resolve participant main concerns in relation to the design, management and maintenance of learning spaces as part of their daily workflow.

The categories presented in Chapter 6 are ultimately integrated in Chapter 7 through the explication of a theoretical code named placemaking. I hypothesize that teachers are placemakers when they enact the four substantive categories presented in Chapter 6. Placemaking is presented as a basic psycho-social process and when taken into account, can have significant positive impacts on both teacher and student subjective experience of learning spaces and hence outcomes of schooling. Placemaking is a theoretical code and as such is a hypothesis that represents the relationship between the substantive categories generated by the study. It accounts for how the substantive categories are related and operate as a unity.

6.1.1 Generating the substantive categories

Any representation of a complex cognitive process is only ever what Becvar & Becvar (2003) referred to as a partial arc. The following representation of the process of generating categories from data is one such partial arc. One of the intriguing aspects of the diagrams that follow is the way that they can be perceived from different intellectual angles to demonstrate the holistic nature of the participants subjective reflections on the learning space context. I imagine when looking at these two dimensional representations how they might look as three dimensional figures that I could walk around in real time to see different aspects of the interactions between the elements. I also imagine what it might be like to stand in the representation itself and see it from that perspective. I cannot do either of those things, however, I have been able to see that the representations can be manipulated in my mind in such a fashion that I can see a kind of relational layering whereby relationships at different levels of abstraction can be perceived almost simultaneously. Figure 6-1 below demonstrates that one perspective is to see the relationships between elements hierarchically, built up from the bottom to the top as increasingly inclusive categories of concepts (A is an example of B which is an

example of C, therefore A is an example of C). At the same time, the indicators (datum) are conceptualized to concepts through constant comparison and concepts are lifted to the status of category through the same process. The concepts can also be seen as properties of categories. So, zoning is a concept while at the same time it is a property of pedagogical problem-solving. Likewise, pedagogical problem-solving is a property of orchestrating learning. Therefore, zoning becomes a property of a property of a category. Additionally, a concept or a category can belong to more than one higher order category. For instance, philosophising is a property of orchestrating learning and it is also a property of maintaining personal and professional identities and roles. It is also a concept in itself, a way of expressing ontological, epistemological and axiological perspectives.

Figures 6-1 to 6-4 demonstrate the building up of categories through constant comparison, conceptualizing and reflexivity.

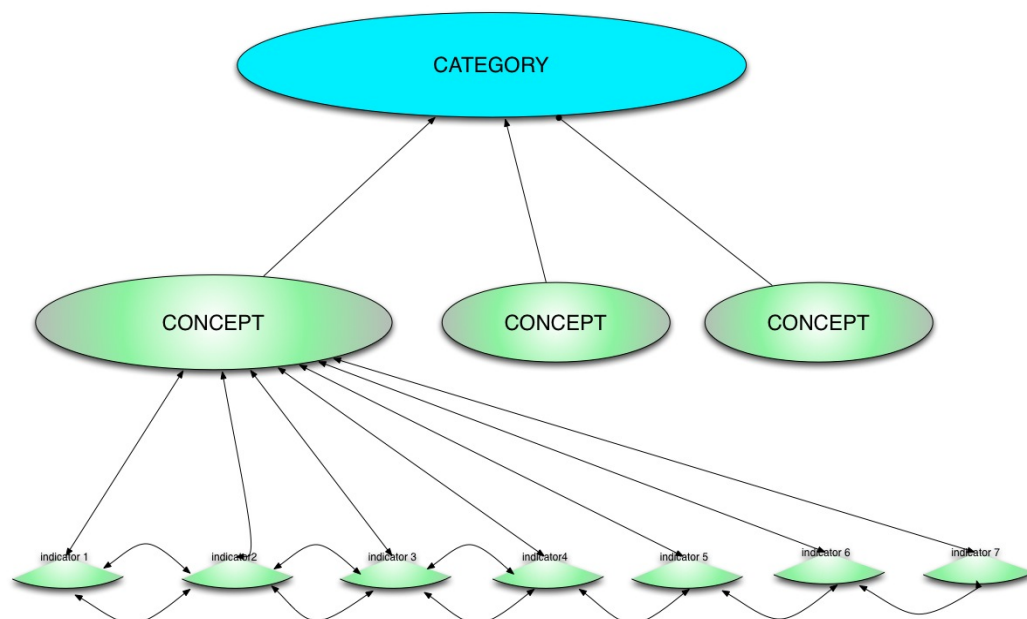


Figure 6-1a Generating concepts, categories and properties from indicators (datum)

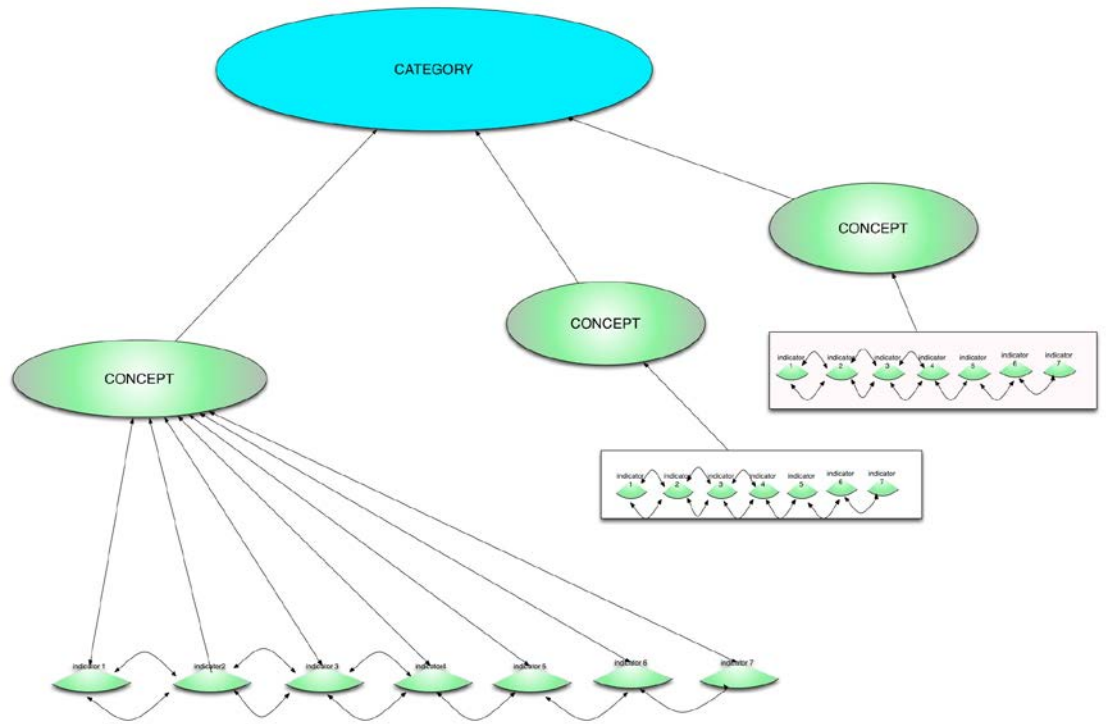


FIGURE 6-1B shows that a number of concepts are generated in parallel through the constant comparison of datum

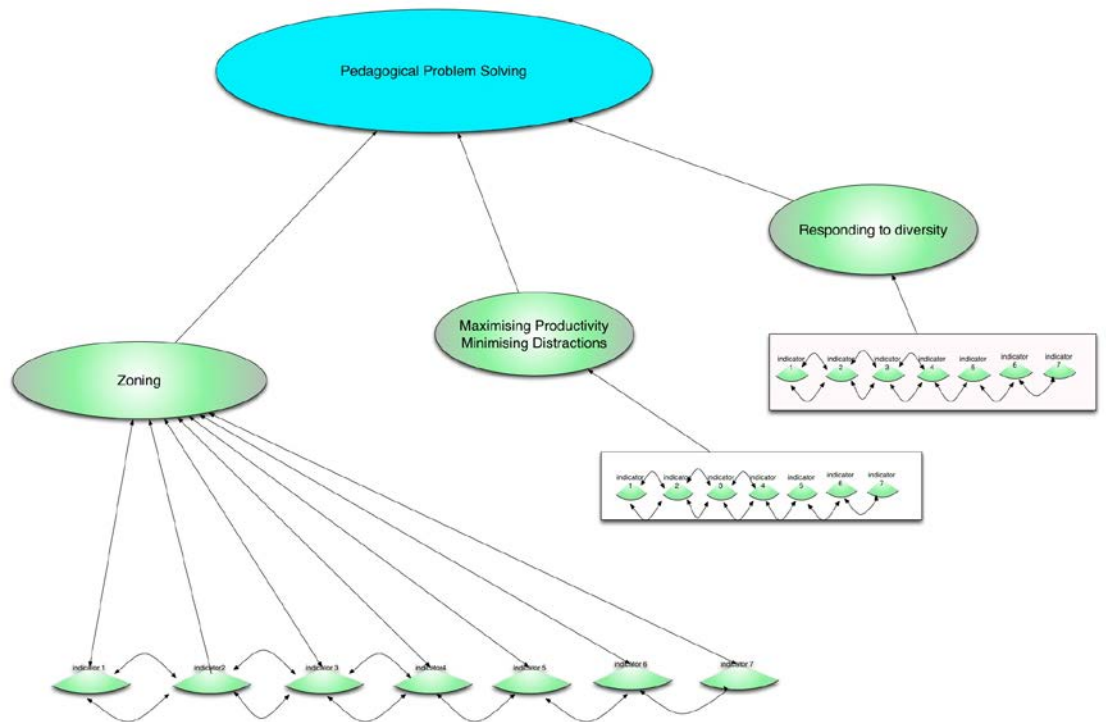


Figure 6-1c elaborates figure 6-2

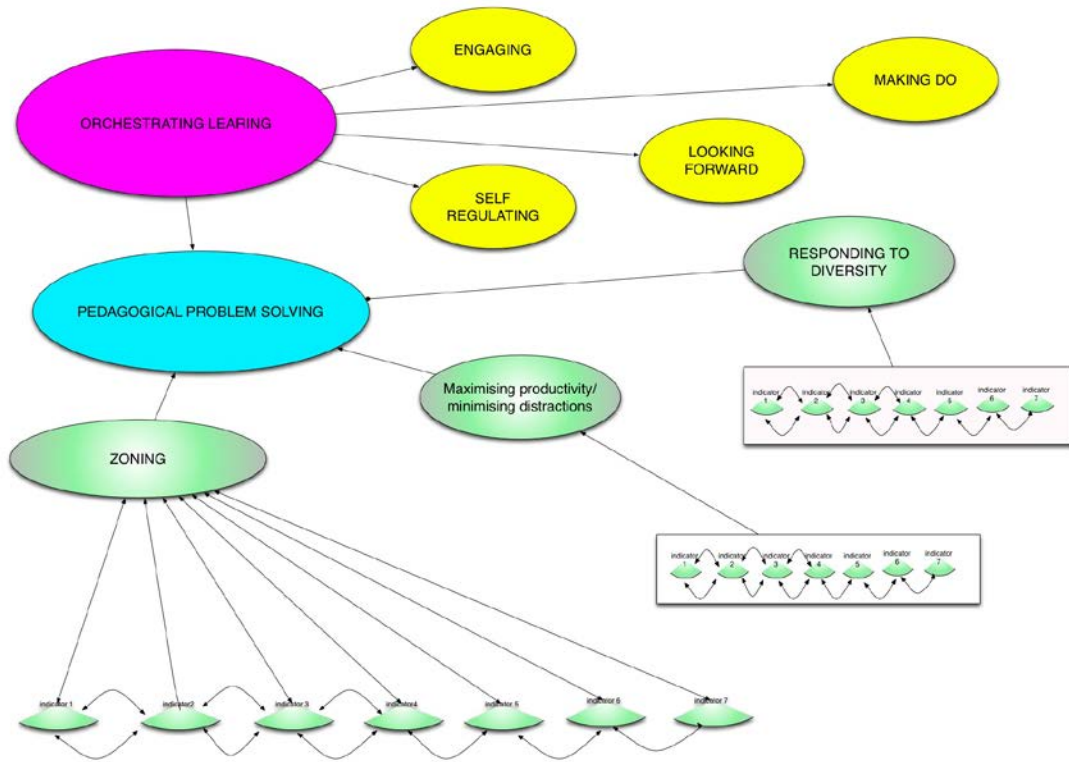


Figure 6-1d shows four levels of conceptualizing with each level inclusive of lower levels

As I engaged in the process of coding, conceptualising and theorising, I reimagined the learning spaces that participants spoke of, as being transactional unities as opposed to interactional contexts (Werner & Altman, 2000). The following diagram demonstrates the relationship between the four categories developed in this chapter and the theoretical core category called placemaking as presented in chapter seven.

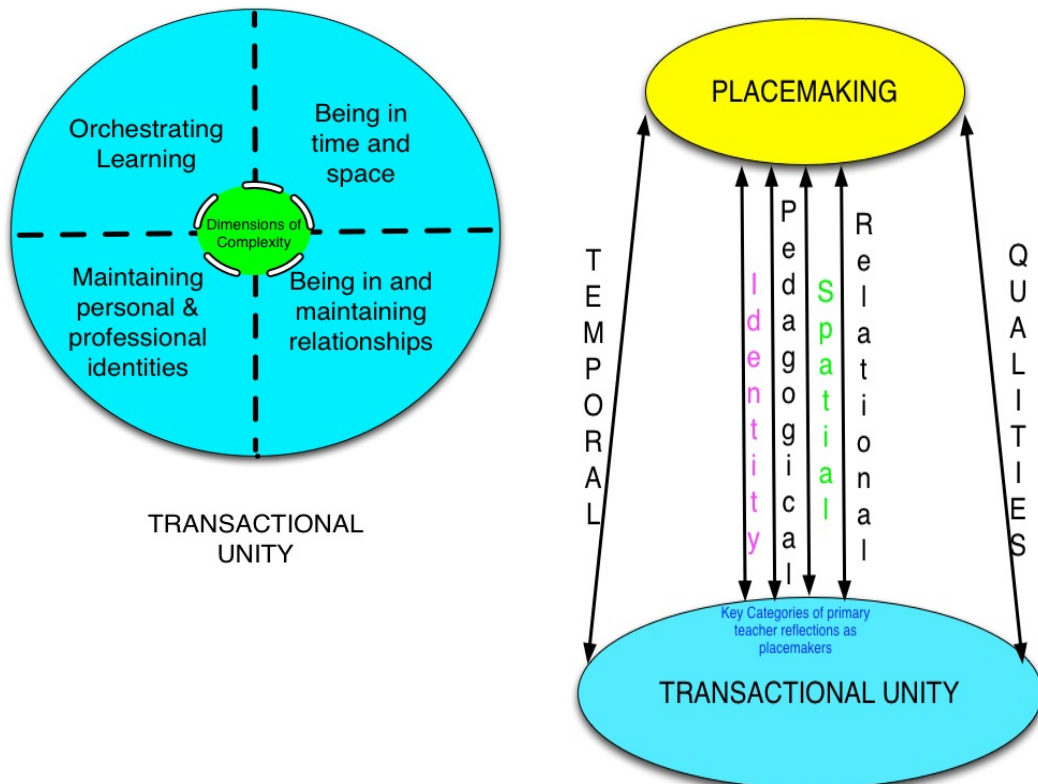


Figure 6-2 Transactional Unity, Substantive Categories and Theoretical Category (Place-making)

Though the initial coding process fractures the data, as the analysis proceeds, this fracturing is resolved and a return to the holistic nature of beings in context emerges again. My initial attempts to deal with this chapter involved treating each substantive category separately, with mention of their operation in real time as transactional unities. Each category has some grounding in extant literature. Each is grounded in the rich data collected and analysed for this study. Each contributes in particular ways to resolving the main concern. Each is operational throughout the full amount of time in which any learning space is occupied. A change in any one area impacts on all of the other areas. This is the nature of complex systems.

The holistic, transactional, systems oriented perspective challenged my way of conceptualizing the presentation of my findings in relation to the substantive categories. Using the reflexive style of writing outlined by Frost (2013), the rest of this chapter provides, a brief introduction to each substantive category and then, an in-depth exploration of the substantive category ‘Maintaining Professional and Personal Identities and Roles’, as one lens for viewing the transactional unity that is the four substantive categories in action. Figure 6-6 below shows how this approach works. The identity and roles lens could be substituted by any of the other substantive categories to privilege that particular perspective. I chose to present my exploration of the identities and roles category in depth, as this provides a cohesive tie to Chapter 7 in which the theoretical code, placemaking is presented. The theoretical construct, place identity, is a core aspect of the placemaking code that accounts for the relationship between the four substantive categories presented in Chapter 6. Throughout the exploration of the identity and roles category, I will

weave aspects of the other three categories to demonstrate how they work as a conceptual unity.

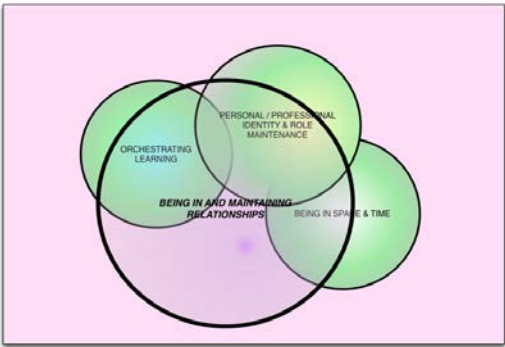
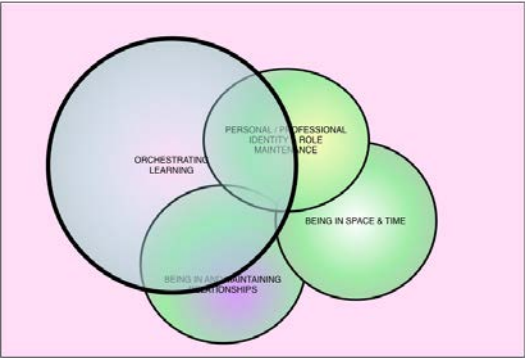
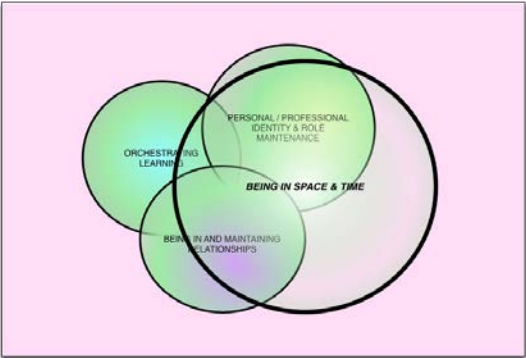
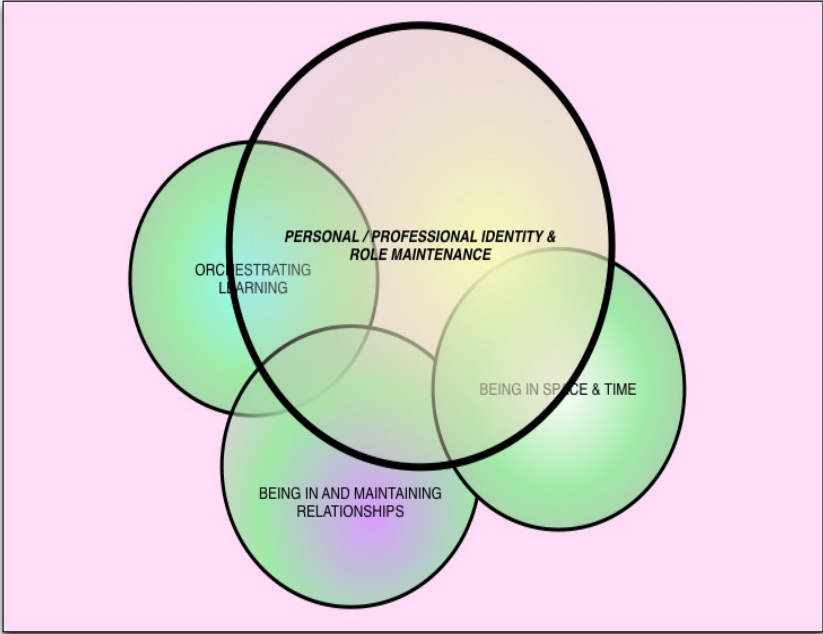


Figure 6-3 Demonstration of the lens approach used to present findings in Chapter 6.

Concept maps showing the categories, sub-categories and properties for each of the four substantive categories generated by my analysis appear in Figure 6-7.

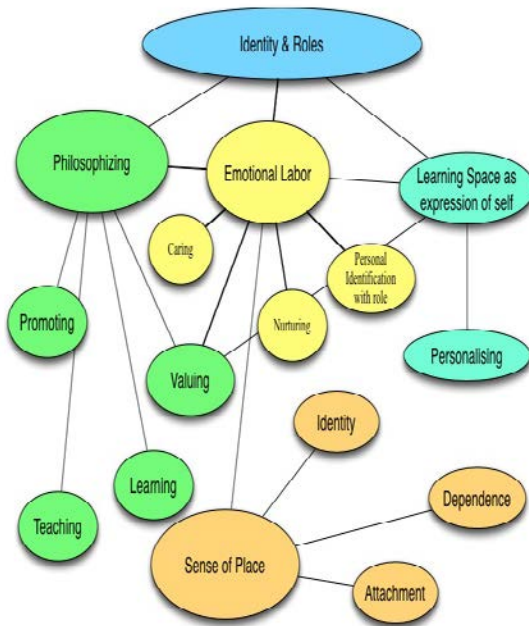


Figure 6-4.1

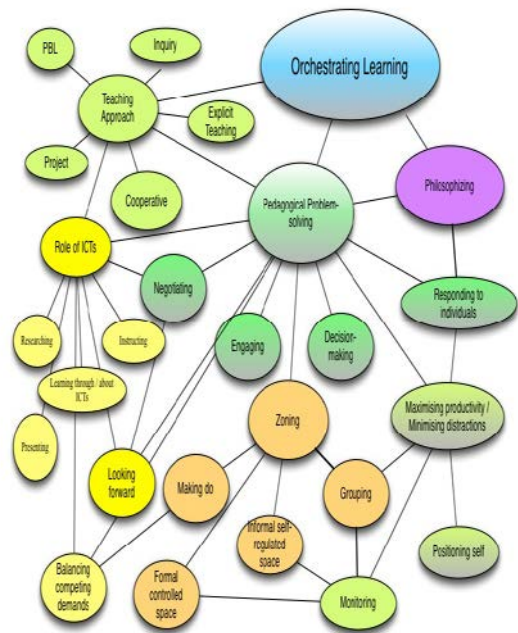


Figure 6-4.2

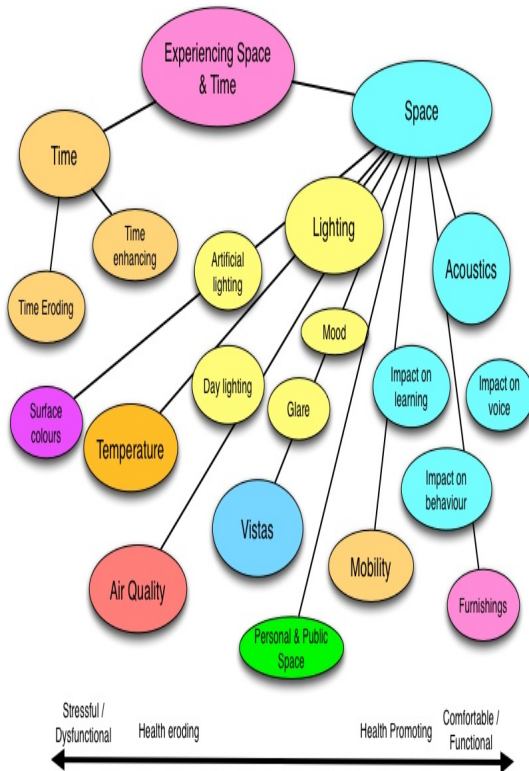


Figure 6-4.3

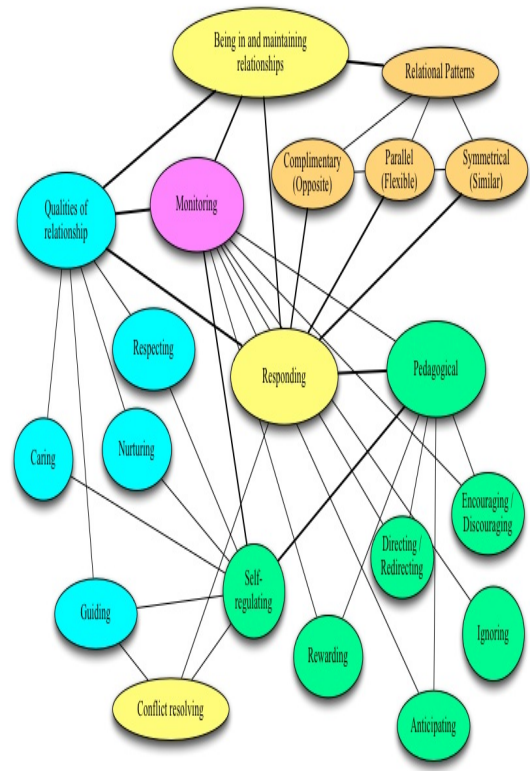


Figure 6-4.4

Figure 6-4 Concept maps of the four substantive categories

6.2 Introduction to the four substantive categories

6.2.1 Maintaining Personal & Professional Identities and Roles

Figure 6.8 is a concept map of the substantive category relating to identities and roles that primary teachers enact as part of their resolution of their main concern when working daily in learning spaces. A detailed analysis of this category is provided after an introduction to the four substantive categories, as the anchor for this chapter's presentation of findings. This category is not in anyway more important than the other three. It was chosen as a suitable subject, to demonstrate how the categories work together to resolve the main concern given the limitations of the thesis as a report on the study. It also provides a convenient cohesive tie to Chapter 7. All of the categories work together in a systems fashion and have implications for each other in real time.

Primary teachers in this study indicated that they see the learning space as partly being an expression of their identities at the personal and professional levels. This is reflected in the often-quoted notion that who we are and where we are, are tightly aligned (Cuba & Hummon, 1993; Pretty, 2012). The study of the dynamics of identity formation and maintenance in psychology is core to the discipline. Understanding how humans develop and sustain a sense of self across environments is important in helping us to understand the positive and negative impacts of environments on people's wellbeing. It helps us to generate risk and protective factors that interact in multiple ways to influence human cognition, affect and behavior. When considering the roles of primary teachers and their possible influence on the development of young people as; learning, social, emotional, spiritual and physical beings; understanding how the identities of teachers in the context of learning spaces works is an important field of research.

This study provides evidence that primary teachers are concerned with identities and that they insert their sense of self into the work they do. This helps to provide a stable sense of self that is crucial for operating efficiently in the multiple roles that primary teachers enact through learning space design, management and maintenance. An elaboration of this substantive category is provided in 6.3 below where I detail the qualities of the category and how the other substantive categories relate to it.

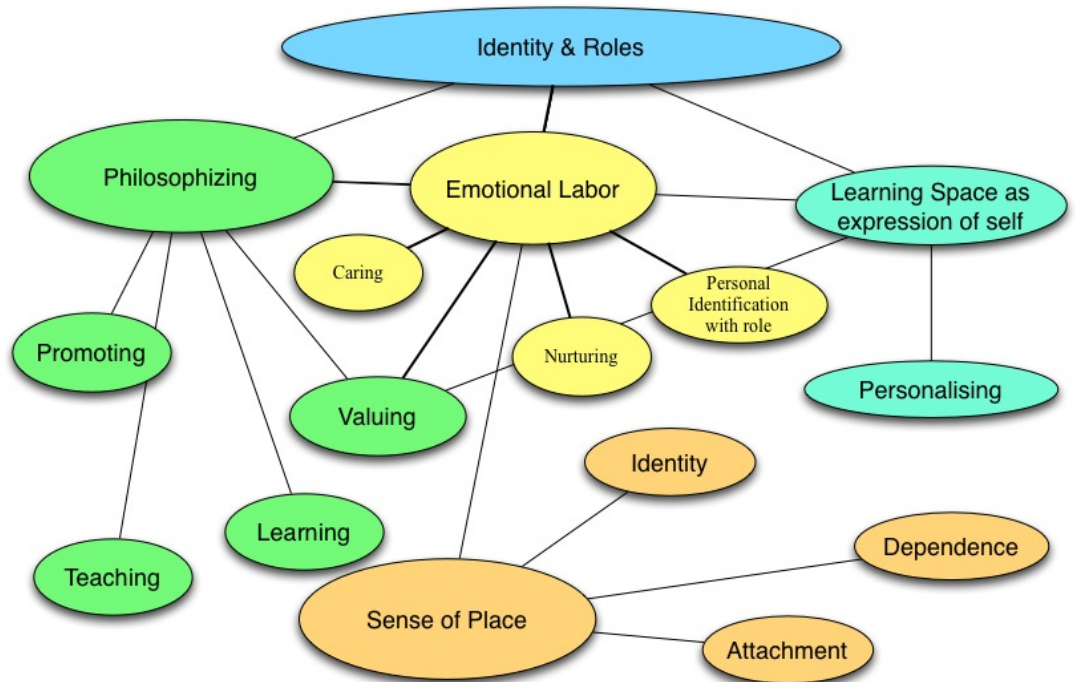


Figure 6-5 Substantive category: Maintaining personal and professional identities and roles

6.2.2 Orchestrating Learning

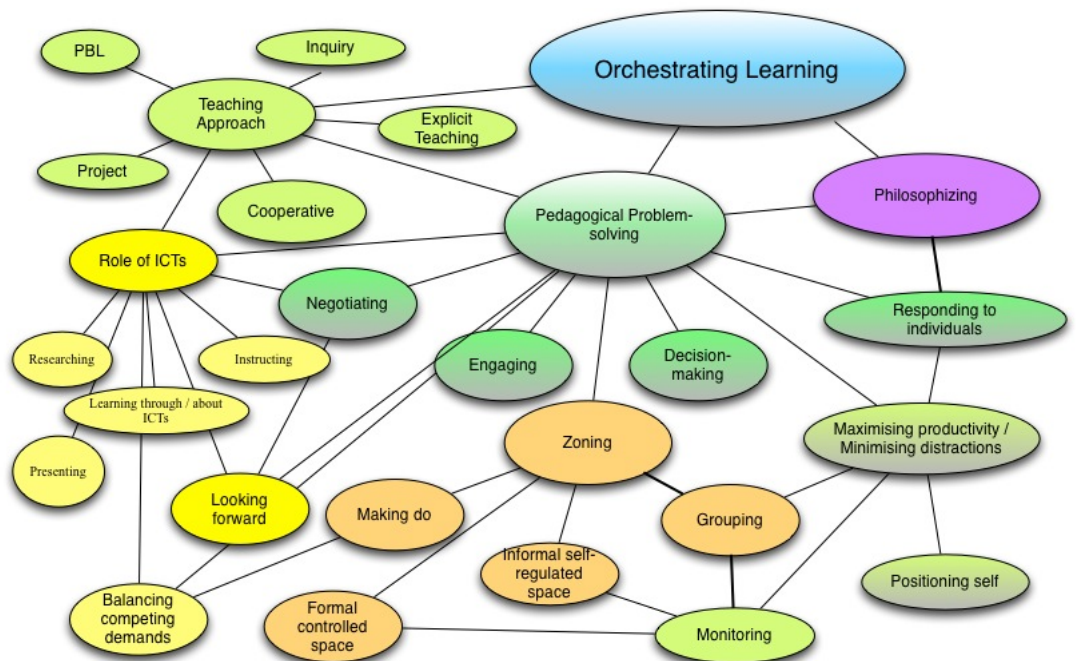


Figure 6-6 Concept map of orchestrating learning

Orchestrating learning is central to the purpose of teaching as a profession. Orchestrating Learning reflects that category of behaviors that teachers engage in, in order to fulfill their socially sanctioned role as pedagogue. It is not a theory of learning and it is not a description of how teachers apply their instructional skill sets. As a category, it accounts for a great deal of variance in teacher behavior. A teacher might be aligned with one set of beliefs about learning or another, but regardless of the underlying belief systems or approach adopted, teachers engage in orchestrating learning. Mastery over instructional micro-skills accounts for some of what this category accounts for. Like the conductor of an orchestra, the teacher is not merely employing technique. The members of an orchestra are all skilled musicians and can play skillfully as individuals. However, if poorly conducted, a group of skillful musicians can provide a less than pleasing listening experience. If well conducted, the same group of musicians can produce music with transcendent qualities.

The properties of orchestrating learning likewise account for wide variations in the actual behaviour of teachers. Zoning is the code that represents that pattern of behavior through which primary teachers establish particular zones in the learning space that fulfill particular roles in support of the behavior setting program. I regard this code as a property of orchestrating learning. Regardless of how much physical space is available, all participants in this study engaged in zoning (Figure 6-10). The way that zones operated and where bounded within learning spaces varied considerably from one setting to the next, however, regardless of how it was done, it was done. Hence the code accounts for variability and transcends people, place and time in a theoretical sense.



Researcher Comment:

All of the participants in the study demonstrated zoning of learning spaces to achieve a range of pedagogical purposes. The photos to the left and below show how a presentation zone was established across sites. All of the learning spaces represented in the study had such spaces set up in them.





Figure 6-10 Zoning is represented in these photographs as presentation space

P1 from interview transcript (Zoning based on perceived characteristics of students):

The setup in my classroom is basically the ones I need to focus on, the ones I need to be checking on tend to be in the front of my room. The kids that work a bit more independently – and it depends on the activities too – there are times when these guys move and when they are at different spots in the room – but if we are doing a whole class activity this is the way these guys are sitting because I know these are the guys I have to focus on umm most of the time.

Now most of that the setup is around my reading groups. This group here is one group, another group and these guys here round the front are all in another group that need a little bit more support, they need to be focused a bit more so they're facing the board rather than working in a group situation. I do have those bigger tables set up there so that even though my groups umm they're actually quite separated because they've got the octagonal table and their desk comes out from there – so they are not actually too close to each other because you just get that distraction factor when they are trying to do that sort of thing.

P16 From coded interview audio recording:

P16 C5 Favourite area – Interactive Whiteboard area and carpet area – visual interactive hands on – free up time – not constricted in chair – can move a bit.

P16C9 Bigbook time shared story – easle and carpet area – text related. Calendar time. Share news & goss (SNAG time) Speaking and listening time.

P16C10 “Fun Parlor” (small room off to side of main room)– pull out programs, assessment tasks, monitoring, one on one for reading. AVT access, power point, science experiments, wet area.

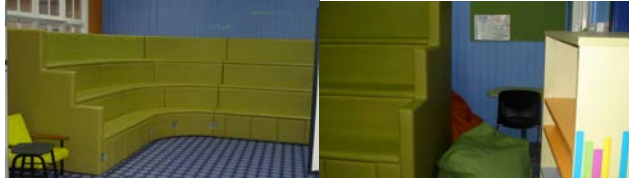
P16C11 Smart moves undercover area – jumping, running etc.

P16C12 Playground equipment

P16C13 Creating spaces that have functions – “That’s the way I am. I’m a very structured person unfortunately”

P4 from interview transcript:

They first meet base camp in the morning, we called it base camp because you know camping theme and the challenge of you know chose a challenge(20:40) and stuff like that so that's base camp, this area here is called Campfire and then this area is here is Water and Coal because there is a fridge and a water cooler in that section as well and we also have a cave but a photo wasn't taken but we took one of the cave but maybe not. We've got another area that juts out for single or independent reading, some kids need a bit of a break from the big class so they're over there on their own for a little while in this cave area. So they're our names this is base camp as I said we need to start the day off collecting money, notes, tell them where they're going kind of thing.



Images of Base Camp

Pedagogical problem solving, like zoning is a pattern of behavior engaged in by teachers with a great deal of variation in the qualities and circumstances under which it happens. Regardless of the variation, as a concept, as a category and as a property of a category, it does happen and can be recognized in teacher behavior across contexts and independent of the characteristics of the individual teacher. The individual teacher will of course engage in pedagogical problem solving in their own unique ways, but regardless of this, it is still a category of behavior that transcends the particular.

The images in Figure 6-11 represent a range of contexts that present different pedagogical problem solving challenges for teachers. They also reflect how teachers have made decisions to manage learning events in particular ways according to how they solve the problem of how to facilitate learning of particular curriculum related concepts, knowledge, skills and attitudes.

P4 from interview transcript: I think and I'm probably getting better at being a problem solver, which I think all teachers have to be, and learning to be problem solver, continuing to develop tolerance and organisation too. I think you know you need to be highly organised with two classes together and with some behaviour issues as well, having management happening there.

P7 Photographs of learning space:

These three images represent three different learning events and zones. The teacher has engaged in pedagogical problem-solving to plan and orchestrate the events. The teacher is also required to engage in pedagogical problem-solving throughout the events as they present a range of points for teacher intervention.



P10 and P11 worked as a team to provide an educational program to a combined class of year six and year seven students. Each of the events represented in the photographs below required an range of pedagogical decisions to be made in their planning and in their orchestration.



Figure 6-8 Pedagogical problem solving in action

Orchestrating Learning shares the property of philosophising with the category 'maintaining personal and professional identities and roles'. 'Philosophising' is the name I gave to a pattern of codes that indicated primary teacher behavior was underpinned by a set of beliefs, values, theories, that represented an epistemological attitude about learners, learning and teaching. These attitudes may be more or less naïve or sophisticated. Regardless they are a significant influence on how a teacher operates in learning spaces. A teacher's philosophy impacts on the teaching approaches adopted, the ways that pedagogical problems are resolved, how teachers relate to students, how they design and manage the learning space and how they interpret what is a priority in terms of curricula. Tensions often exist between a primary teacher's philosophy of learning, teaching and schooling, and these tensions need to be resolved in order for the teacher to achieve a degree of psychological congruence in context. For example, despite holding a philosophy of a child-centred curriculum delivered through a well resourced, flexible, stimulating and engaging environment, primary teachers are often challenged by the very lack of these qualities of the environment. Hence they are required to 'make do', and to 'balance

competing demands’ in order to do the best they can with what they have and given the restrictions of state mandated curricula and testing programs.

The images below contrast two teaching philosophies and the use of space by the teachers concerned.

P13 is an early childhood teacher. This teacher also works in small school contexts where children from year one to year seven occupy the same spaces. For this teacher, learning is experiential. Children are given opportunities to experiment, play and find their own ways of solving problems.



P12 teaches a middle primary group of students in a single learning space. Her approach to teaching and learning more teacher centered than P13’s. The use of space and type of learning activity contrasts significantly to that of P13.



P12 from coded transcript of interview:

P12C16 Set up of space more to do with behavior management – if I can get them behaving well then everything else fits into space.

P12C17 Get things under control and then eyes at me and then things go well.

Figure 6-9 Contrasting philosophical positions influence the use of learning spaces

‘Looking forward’ is another pattern of behavior identified through the process of orchestrating learning. Looking forward is something that has considerable influence on teacher behavior and seems to be adopted as a behavior in response to the demands of the developmental nature of the education enterprise. Very young children come into the formal education system in Australia (4.5 years old). These young children have little time before the play-based preferred ways of learning espoused by early childhood programs give way to more formal, structured ways of organizing learning spaces, curriculum and pedagogy. Early childhood teachers ‘look forward’ to the environments they know their students will be required to occupy as they progress from year to year. Hence, they provide increasing opportunities for children to experience the qualities of the environmental demands that they are likely to experience in the following years: occupation of single desks, more time sitting at desks, less time for periods of rest, more didactic pedagogical approaches, being required to produce artifacts of learning through more formal means and spending more time inside rooms as learning spaces. Self-regulation becomes a significant concept associated with ‘looking forward’.

At the other end of the primary schooling developmental range, teachers look forward to the secondary school learning environment and begin to shape the learning environment they occupy to increasingly reflect secondary school. This includes timetabling, moving to teachers for specific subjects, organizing personal

items, increased periods of formal instruction, adjusting to the learning demands through structured assessment processes, increasing focused attention periods on specific learning tasks, increasing use of print-based texts for learning, homework demands, and self-regulation is again a significant concern for teachers.

P13 from coded recording of interview:

P13C5 Looking forward to year 1 and beyond – preparing chn for non-play-based learning environment.

P13C5.1 Preps have ‘textbooks’ – easy activity

P13C6 Literacy rotations – writing response task – preparation for NAPLAN – genre based approach – year ones and year twos. Preparing for year three tests.

P6 from interview transcript:

I’m also trying to get them focused for next year when they go to high school where they’ve got a double desk and basically um there’s only enough space for every single person to come in to the classroom and if you’re the last one then you get the last spot in the room sort of thing. So they’ve got to learn that they’ll be people around them that could be distracting but they’ve also got to learn to try and focus on it.

The increasing role of Information Communication Technologies (ICTs) in contemporary education has a significant impact on learning spaces. Schools are increasingly opting for ubiquitous technology options in learning spaces and the availability of mobile, internet connected devices is having an impact on how ICTs influence learning spaces. Many schools still establish or continue to use ‘computer labs’ for addressing issues of access to ICTs for instruction. In addition to this, classrooms often contain banks of desktop computers that raise concerns for teachers about managing equitable access, placement for ease of supervision, glare on screens from windows and other sources of light, noise and visual distraction for learners who are not engaged with the computers at any given time and software management issues. The use of desktop computers takes up a lot of space in a classroom and therefore as a zone, leaves less space for alternative zoning.

The bulk of classrooms in this study included the use of electronic whiteboards and this necessitated creating a zone for this device. These devices are valued highly as pedagogical aids and teachers report that student engagement is enhanced through their use. Their presence though creates a range of issues for teachers in terms of the design, management and maintenance of the learning space. These range through pedagogical problem-solving, zoning, maximizing productivity / minimizing distractions, balancing competing demands, philosophizing, adoption of an instructional approach, looking forward and making do. They are a high impact variable in the learning space. Likewise, when a school transitions from the use of computer labs, or banks of classroom desktops to the use of wireless enabled mobile devices for all students, the use of ICTs becomes a high impact variable that impacts considerably in the category ‘orchestrating learning’. The images in Figure 6-10 have been taken by nine participants across ten learning spaces and five sites.

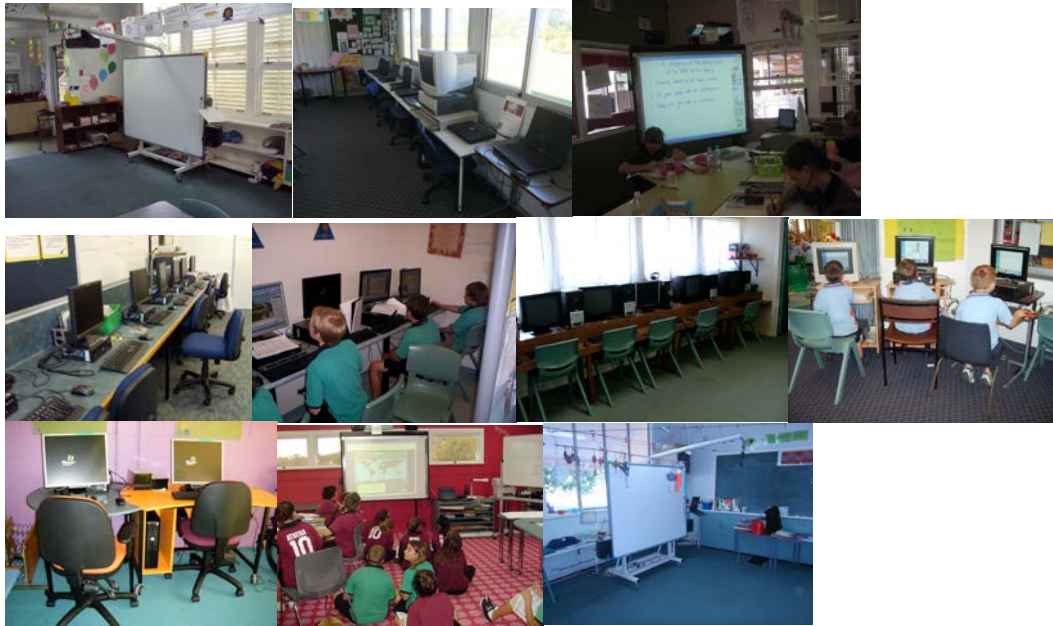


Figure 6-10 Examples of ICT use in learning spaces across five sites.

6.2.3 Being in and maintaining relationships

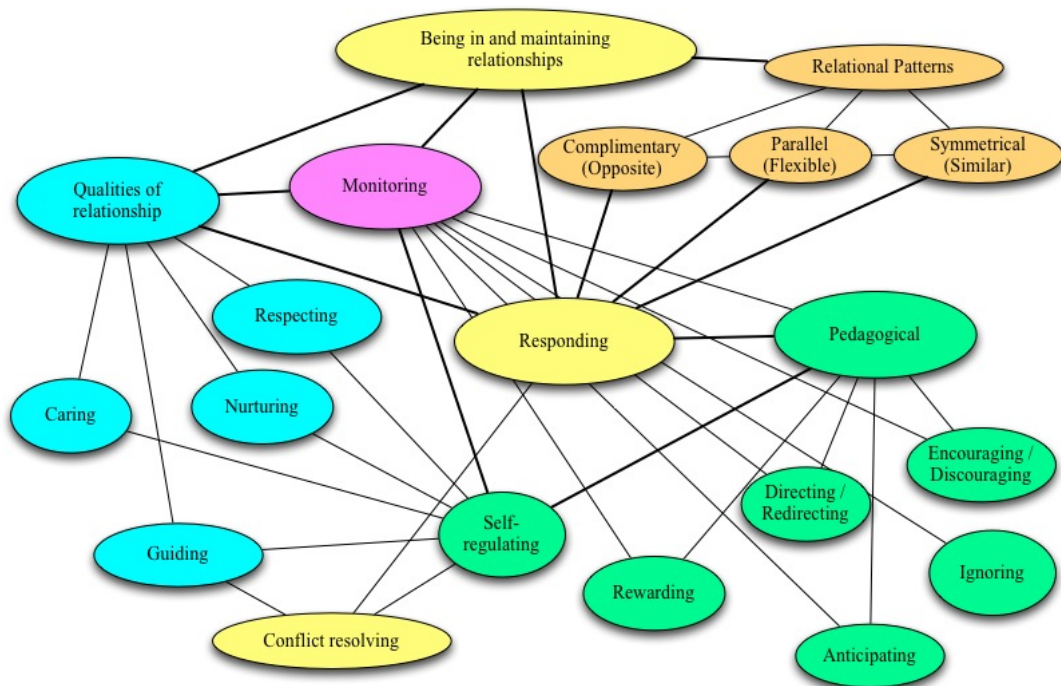


Figure 6-11 Concept map of the category, Being in and maintaining relationships.

Being in and maintaining relationships is central to the education enterprise in primary schools. Teachers who adopt a social constructivist epistemology see learning as occurring in and through the social contexts of a child's life. Even those teachers who view learning as being essentially about transmission of knowledge through processes of reinforcement, shaping, and conditioning; a behaviorist

pedagogy; have to operate in a social context and use that context to achieve their educational intentions. How a teacher experiences, manages and responds in relationships has significant implications for how they orchestrate learning, how they experience identity and roles and how they ultimately experience being in space and time.

Relational patterns are influenced by spatial variables in various ways. P7 provides salient evidence in this regard when she talks about the impact of a refurbished learning space on her pedagogy, awareness of self and behavior of students (See box below). P7 sees her relationship with her students, and the relational atmosphere of the learning space as being important for learning. The new refurbished space she was operating in was very different to the traditional room with desks in rows that she previously had. The new space decentred the teacher and provided some challenges as she had to adjust through pedagogical problem solving to the new demands of the physical qualities and affordances of the space.

P7 (from interview transcript)

I think for me I'm very strong at relation stuff with the kids, building relationships and having a good bond with the kids. I find if I don't have that, then I don't have them. I'm quite a traditionalist. Prior to this my classroom would be in rows with the children facing me. They will move when I say they could move, they would work when I tell them to work. I had quite strong boundaries, but I'm prepared to have them to be flexible.

I really want the kids to come to school and feel safe and feel and have – for school to be a pleasant environment for them, a happy environment for them that's the most important thing for me, if they don't feel that I don't think they believe they're not in the right frame of mind for learning.

I do have a presence and the kids seem to cope quite well with that. Some people have had difficulty coping with me because I am so big and loud but the kids aren't overwhelmed, we had a good thing going. I've had these kids since the second grade and we have quite a strong relationship and a strong bond, a really nice vibe in the classroom.

I'm still in the process of working out for myself how to teach most effectively in that classroom. Because of its shape, its configuration and the size of my class it does pose some challenges. If I want to teach to them directly with them at desks working and following my instructions and stuff it's very difficult to do because I have a very long teaching space so you need to project your voice. That's very difficult to get the attention of the kids at the back. That's really challenging how – how do I do my direct teaching so that I have their attention and keep them engaged without them wandering off and being distracted and stuff like that. That's my challenge in the space that I have.

I teach through the centre of the room and I very often have kids in this part here [20:51] all the furniture is on wheels so we can move this out and fill that. I can't actually fit them all through the boomerang tables and the round table and I have a couple in there and they'll come out and pull the table out so they can have seating to have access to that as well. I found doing a lot more group work, flexibility in the group work I very often will teach something and then we'll come to ... I'll have the kids who can work on it at the boomerang tables, the kids who need more help sit at the oval table.

Different teachers emphasise different aspects of relationships in learning spaces. Regardless of the qualities they value, all teachers must by the nature of their profession, conduct their work through relationship. The category does not speak to what is better or worse, or what influences the outcomes of learning more or less. It speaks to the pattern of behaviors that we broadly call relationships, their qualities

and the need to maintain the relational patterns in a learning space in the service of learning and the broader aims of schooling.

P2 (from interview transcript) is talking here about the need to provide children with a voice in how the learning spaces is set up and maintained. She is engaged in 'looking forward', 'philosophising', 'pedagogical problem-solving', 'valuing', 'negotiating', encouraging 'self-regulation' and 'respecting' in this short section.

I think they need, the children [53:28] need to have some power in the whole situation, whole set up and I think the early years curriculum guidelines is very strong on that philosophy [53:51]. I'm just probably more of a traditional stand up the front teacher but I see the value and the joy that children have in learning and being a part of our class. I hope I've always made an attempt to ensure that children are safe and happy and I think that I've done reasonably well. This is just this sort of philosophy, I just think it's the way it should be. Kids are learning and I'm learning still and there's been studies that show, like long term studies that have shown the children who have been in a classroom like this where they've had power and some say and they understand that they have rights that they have a voice, that they'll be listened too, but that they also need to respect the rights of others, actually at the end come out as being citizens who are more likely to participate in society as a productive citizen. Its not just a person who gets a job but it's a person who will move on to working well. That they understand that they actually have an obligation to use [55:33]...

I'm not the only person up the front all the time. It's wonderful to see the children supporting each other. Like there are kids for example their artistic abilities are way beyond what mine were and so for the children in this classroom, "my friend Fred is the expert on that and if I ever learn about how to draw a better dog or whatever I'm much better off going to that person than going to my teacher."



P12 (from coded interview) is much more concerned with being in control of and managing student behavior than was P2. The codes below indicate this teacher's concern to be the centre of management of relationships in the class. She is much less concerned with promoting self-regulation, student voice and looking forward than P3.

P12C9 Easily distracted children need to be considered for positioning near to white board

P12C10 Use physical proximity to manage student engagement.

P12C16 Set up of space more to do with behavior management – *"if I can get them behaving well then everything else fits into space."*

P12C17 *"Get things under control and then eyes at me and then things go well."*

P12C18 Getting the social relationships right is an investment.

P12C23 Don't want to use group / pods – aspect of philosophy. *"It's my job to make sure they learn and my job to teach them."*

P12C24 Group work at end of term only as a treat.



Primary teachers are major contributors to the creation of a relational environment through their roles, agency and status as adults and educational professionals. They may or may not engage students in assisting to establish an explicit relational culture in the learning space through expressions of care and concern, nurturing, guidance, establishing symbols of culture, rituals and routines, sanctions for behaviors that run counter to the culture, constant monitoring of the relational environment and responding to relational conflicts and events that threaten the program of the behavior setting. Some primary teachers express a philosophy of teacher centred didactic approaches while others subscribe to child centred approaches built on social constructivist perspectives. The way a learning space is designed and managed has an impact on relationships through these expressions of philosophy and interpretation of roles. When a behavior setting based on a teacher centred configuration of furniture, and use of fixtures such as whiteboards is established, the relational patterns are quite different in quality to the child oriented, decentred, flexible and interaction oriented pattern of furniture and fittings. Two teachers may express very similar views on warmth, concern for student welfare and responding to individual needs, but the ways they establish their learning spaces will set up relational patterns that are more or less likely to support particular ways of behaving and relating. This is so in terms of teacher to student, student to teacher and student-to-student relationships.

P12 for instance spoke of only allowing group work at the end of term as a treat for students. This teacher also set up a teacher center from which she could regulate student behavior and have students come to her for assistance when independent seat work was prescribed. To me, it seemed like the seat of power in this context followed the teacher around. It resided where the teacher resided.

P10 and P11 in contrast, planned the learning space along with the students to emphasise self-regulation and self-determination. This reflected the teacher's strong emphasis on the role of motivation on cognition and behavior. P11 commented that the learning space was zoned in such a way that student behavior and activity was shaped by the space. In this sense the space was pedagogical. It invited certain behaviors, or relational patterns, and discouraged others. This was supported by a powerful and explicit philosophy relating to the establishment of a 'potentiating learning milieu' (P10 and P11, Personal communication) that included many artifacts of a group culture. Signs, symbols, reminders, resource centers and access, constant teacher reference to the relational guidelines of the milieu all supported the way the learning space was designed, managed and maintained, to focus students on pro-social behaviors, active engagement in learning, being responsible and accountable

and learning with and from each other and the teachers. This complex, multidimensional environment shaped relationships. These teachers were certainly heavily involved in the relational climate of the learning space, yet with an initial investment on establishing positive, learning focused and caring yet accountable relationships, a climate of relaxed, busy and cooperative relationships was established.

In such a climate, it was evident from the teacher's reflections that parallel relational patterns dominated. Becvar and Becvar (2003), outline three relationship patterns from the systems oriented perspective. Complementary, symmetrical and parallel styles have been identified (Becavar & Becvar, 2003) and help to understand how an individual's behavior is shaped in part by the behavior of others in the behavior setting. Like behavior setting theory (Barker, 1968; Schoggen, 1989) in which the setting predicts en mass behavior accurately, these styles can also help to predict behavioral outcomes in intimate and group contexts. Behavior settings shape the relationships between groups of people. For instance, the spectators at a football match behave like spectators and the players like players according to the behavior setting program. In a classroom, a teacher can respond to a student in complementary way, such that the student's behavior is matched by an opposing behavior of the teacher. This often de-escalates conflict in situations where a student is motivated by power needs. A shouting student is met with a quiet voice and calm and inviting body language.

Symmetrical relationship patterns are demonstrated by behaviors that are matched with like behaviors. A shouting student is met with a shouting teacher and each gets louder until a point where the exchange must stop or risk getting out of control. Both complementary and symmetrical styles can be rigid and invite dysfunction. A parallel style is more flexible and accommodating as it includes both complementary and symmetrical behaviors. Additionally, when engaging in complementary patterns there is a tendency to alternate 'one up and one down' positions (Becvar & Becvar, 2003).

These relationship patterns are also present in the pedagogical relationship between teachers and students in learning spaces. Teacher behavior is shaped by student behavior and visa versa as the relationship flow of the context moves through time. Teachers use a variety of micro-skills of relationship management across their day in response to how students behave. Relational patterns are established over time as both students and teachers become somewhat predictable to each other. Without this dimension of predictability, a relational environment could become very stressful. Some microskills are more effective with certain individuals than with others and teachers learn this through regular interactions and knowledge about student circumstances. A child who has been subjected to violence, trauma, neglect and abuse, is typically (though not necessarily) less likely to respond well to controlling behaviors by adults. At the same time, they respond well to clear boundaries in relationships and the imposition of natural, fair and clearly communicated consequences. Hence, teachers are required to be mindful of that their relationship styles may need constant revision according to the characteristics of students and in turn, the physical environment may also need review.

6.2.4 Being in space and time

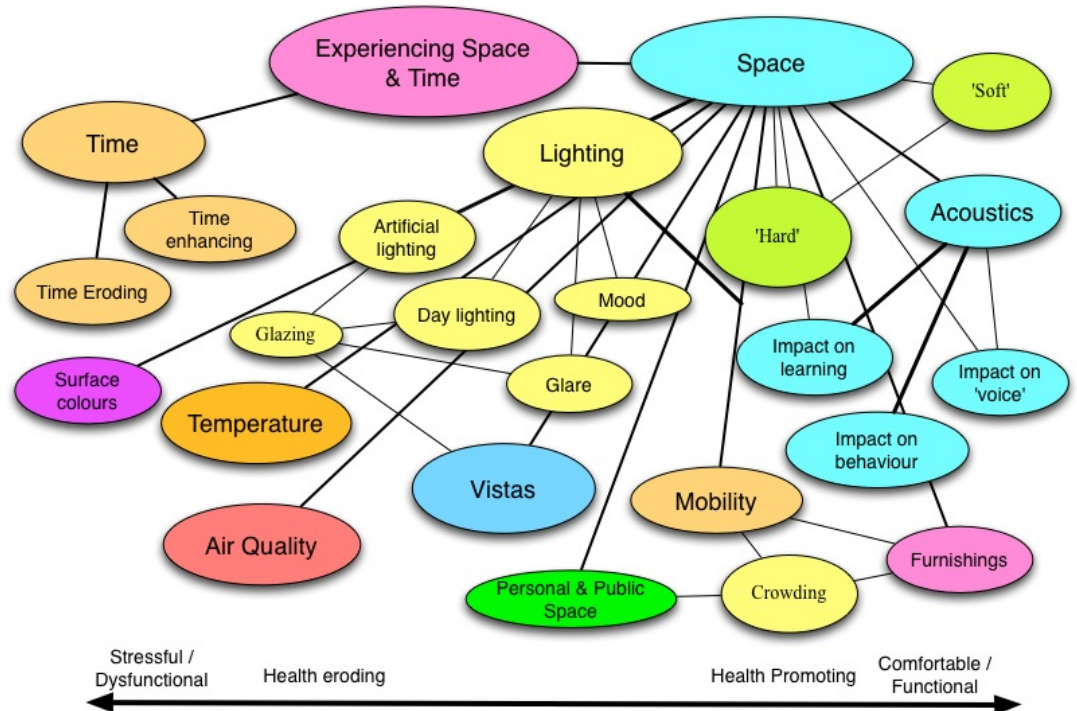


Figure 6-12 Concept map of the category, Being in space and time.

The human condition is one of being embodied and therefore embedded in space and time. How we experience any environmental context is a result of complex processes of perception, meaning making (through cognition, language, memory, learning, affect), motivation, recursion and feedback loops, socio-cultural understandings and contextual interpretation. The human experience of space and time is an enduring phenomenon and subject to theorization across a number of disciplines: Philosophy, psychology, sociology, education, human geography, architecture, art and literature, and neuroscience in the least. The concept of the experience of embodiment is existential and therefore of perennial interest.

As indicated in Chapter 3, environmental psychologists have researched the impact of many environmental variables on the academic outcomes of school students. This research tradition continues but with a more holistic flavor than in earlier times (Barrett et al, 2013). I indicated in Chapter 5 that the learning space environment is complex, dynamic and transactional. Individual environmental variables become high impact variables from time to time and differentially for individuals. The flicker of light caused by a ceiling fan interacting with the artificial lighting can have a significant impact on the experience of a child with autism but little impact for a peer who sits nearby. When an air-conditioner breaks down and the ambient temperature is 40 degrees centigrade, most occupants of a learning space will be seriously impaired in terms of learning. The temperature which hitherto was a background variable suddenly becomes a high impact variable. The acoustic qualities of a demountable classroom may not be too intrusive on teaching and learning until building works commence nearby in the school. Then the acoustic qualities become a high impact variable.

Time can be a high impact variable like other variables such as noise, temperature, air-quality and lighting. The rhythm and flow of time may be relatively stable in a learning space until it is perturbed by the need to fit in time for sports carnival preparations or some other priority event in the school calendar. Teachers then feel pressured by time to squeeze more into the less available time for national testing preparation or other activity. The impact of this variation in the use of time for different competing demands, on how the learning space is managed and maintained can be considerable.

Participants in this study indicated that there are many dimensions of space and time that impact on their experience of learning spaces. The dimensions of time and space represented in Figure 6-12 indicate aspects of time and space considered by primary teachers to have an impact on teaching and learning. These dimensions are highly transactional. Changes in one can impact significantly on others. The environmental variables indicated can have positive or negative impacts for teachers and learners. The qualities of some factors tend to make a learning space more or less stressful, healthy or unhealthy, and time eroding or time enhancing than others. When considered in relationship the factors can compound or mediate impacts.

A crowded learning space lacks affordances associated with private space and can increase stress levels for some occupants. If a crowded space is also associated with poor ventilation, heat, poor air quality, limited mobility, a requirement to stay in a seat for extended periods and limited vistas, many occupants will be affected negatively. If some of those same variables occur, but in a larger space that affords mobility, private space and vistas, the impact of the other variables may be mediated and the experience of occupants less stressful.

The following quotes from participant interviews demonstrate some perspectives on space and time in the context of learning spaces.

P2 (from interview transcript) 'making do' when the space is constraining.

I wanted a place in the classroom where the children can work together in a small group if they needed to but to be at the computers. So where I could put that was limited by where the access points in the wall were and where we could set up computers. I didn't want them at the front of the room or at the side of the room because if there's students at the computers and other children working at something else then the children who were working at the desks or on the floor or whatever tend to have their attention focused on what is happening on the screen. So if that's at the back of the room it's less distracting. So here I had to actually run the internet cables through the window to a point there on the wall.



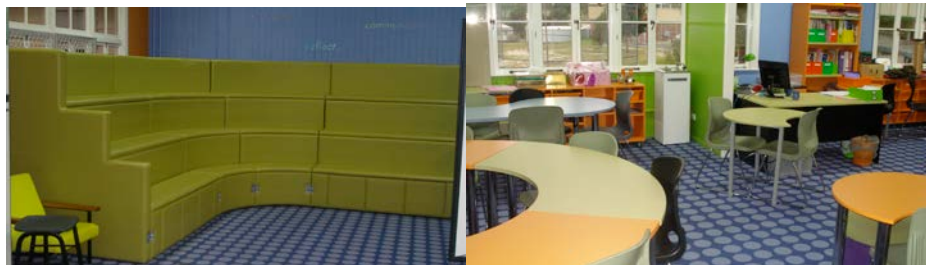
I put this one in because for little guys we need a space where they can sit on the floor and all be together and learn as a group and participate in discussion and that sort of thing and all of the

children could use that space when it was available



P4 (from interview transcript) indicates how ‘zoning’ operates in a large refurbished learning space.

...this one is where they first meet (at) base camp in the morning. We called it base camp because you know camping theme and the challenge of you know chose a challenge (20:40) and stuff like that so that's base camp. This area here is called Campfire and then this area is here is water and coal because there is a fridge and a water cooler in that section as well and we also have a cave but a photo wasn't taken. We've got another area that juts out for single or independent reading. Some kids need a bit of a break from the big class so they're over there on their own for a little while in this cave area. This is base camp as I said we need to start the day off collect money, notes, tell them where they're going kind of thing. This is a photo of base camp here. We do have some beanbags that come out from behind here for the seating for reading and things like that. We used to use the bean bags in base camp all the time but we found it was quite distracting the kids they just couldn't handle it so we just sort of gradually working up to that. This little seat on its own here some kids if they're not focused when they're in base camp in a big group or even when they're in our other areas and they need to be on their own to just settle and focus that's the spot.



P4 (from interview transcript) indicates how different aspects of space impact on teacher and student behavior.

... you know even the noise like we've got to try and when it just gets too noisy through chimes and on the third chime everyone is perfectly still and they're good with that. They like that because the first few days we were up there we found them all shouting because the kids are in all those areas and we weren't used to it either and we thought, where do stand for them to hear us and we were shouting and we knew we couldn't go on with that. But we've fixed that problem up and part of that problem was having kids in that cave area, whereas we don't now so it's quite good.

P1 (from interview transcript) indicates how having the space to establish groups allows for catering for students with different learning characteristics and different activities that can be run in parallel. Without these spaces, the teacher would have to make decisions about how best to achieve her aims with what she has (make do).

Now most of the setup is around my reading groups. This group here is one group, another group and these guys here round the front are all in another group that need a little bit more support, they need to focused a bit more so they're facing the board rather than working in a group situation. I do have those bigger tables set up there so that even though my groups. They're actually quite separated because they've got the octagonal table and their desk comes out from there so they are not actually too close to each other because you just get that distraction factor when they are trying to do

that sort of thing.

We are really lucky in that regard because I've got that separate space. I have my classroom we have the computer lab which is one of three which is a long narrow room that runs down the side of my classroom and the classroom next door... the kitchen area, the lab, my classroom or outdoor. I really want to move the kids around to get them sort of basically where they can concentrate and not get distracted because if you are doing group work and everyone is doing different things and if it's quite an exciting type of an activity you need to have a bit of space between each group...



P6 (from interview transcript) comments on some environmental variables and their effects.

But I was also thinking too like even the smells, associated like when you mentioned hospital like the first thing I can think of is just like the chemicals they use to clean and then very similar ones that are used in the school toilets and the tops of the kids desks. So that to me is another sensory thing that is effecting because as soon as they walk into the classroom and they can smell something different it's sort of just out of the ordinary for them.

...before all the renovations one of my children when they'd be working in a little reading area over in the infants section, for some unknown reason they had an allergic reaction to something in that room and have come out in spots galore, so there's obviously like the like whatever is in rooms as well will effect them.

6.3 Maintaining personal and professional identities and roles

6.3.1 Introduction

This section provides a detailed analysis of the substantive category and presents this as a lens through which the holistic transactional nature of the substantive categories can be viewed. Anyone of the substantive categories could be used to achieve this, however the limitations imposed by the thesis format prevent the full explication of each substantive category. Maintaining personal and professional identities was chosen for elaboration because it provides a cohesive tie to Chapter 7 that deals with the theoretical code: Place-making.

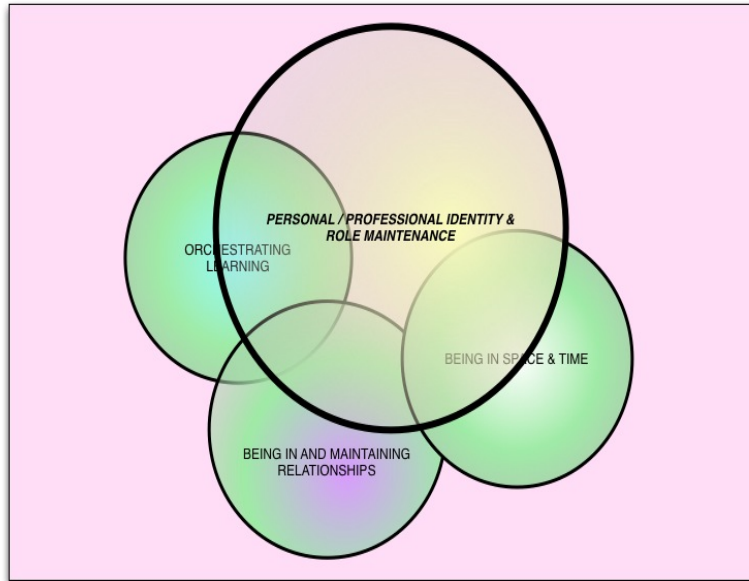


Figure 6-13 Using a category as a lens for demonstrating the transactional-unitary nature of substantive categories

This category was generated from patterns in the data that I see as being artifacts of the basic human need to create, and maintain, a sense of self through the types of activities we engage in as we live our lives. I have developed this category in detail to demonstrate how the substantive categories are generated from an analysis of data that includes participant subjective reflections, along with information from extant literature and researcher reflexivity. A brief introduction to theoretically sensitizing concepts that support the existence of the category is provided, before the properties of the category are outlined through a presentation of evidence from the relevant data. A description of how the four substantive categories play a role in resolving the main concern of primary teachers as they design, manage and maintain learning spaces as part of their daily workflow then follows.

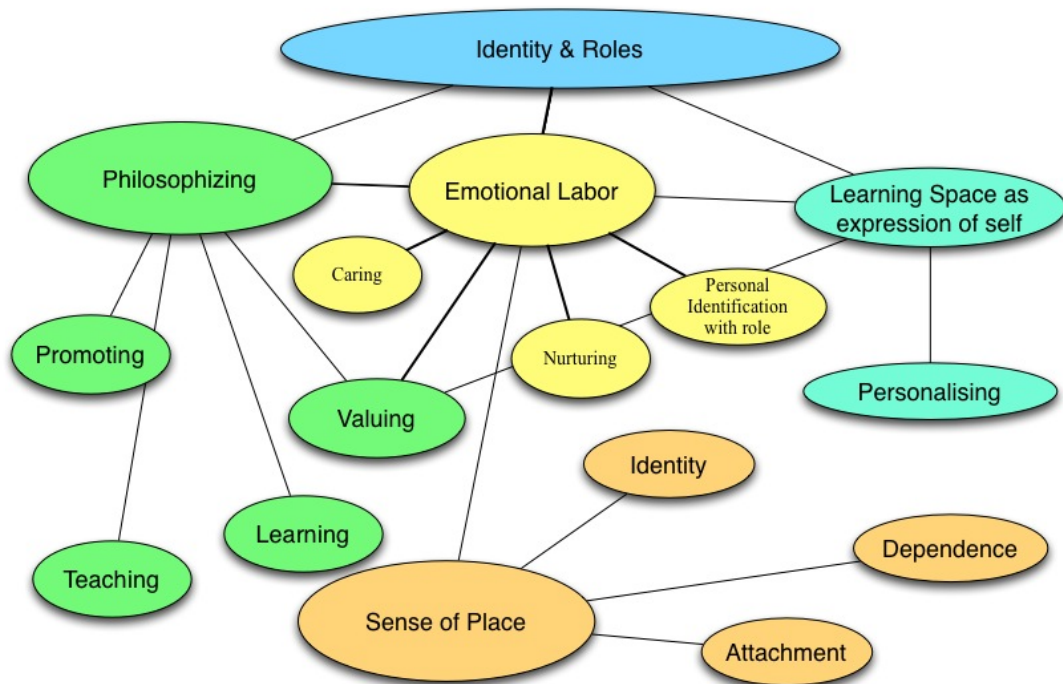


Figure 6-14 Concept map of the substantive category: Being in and maintaining person/professional identities and roles.

6.3.2 The importance of identity and role maintenance in primary teaching

In my second interview for this study, an experienced early childhood teacher, expressed her frustration and disappointment with the state education authority that employed her. Her comments indicated a personalization of systemic decision making that impacted on her work. There was a politicization of the context for this teacher as she saw the state Premier as being in part to blame for the kinds of stressors that she experienced in the classroom. The teacher perceived a clear lack of empathy being expressed by the Premier for the teaching profession.

P2 (from interview transcript)

I suppose as curriculum goes, the challenge is more and more is shoved in - every time there is something on the media about oh- there is a problem - oh well we should educate children to do that. The school should do this and the school should do that and there is only so much the school can do and if they want (they being society) if they want literacy and numeracy you know, they want really good scores, then we need to be able to focus our time and attention there. So I get a bit frustrated that way and this year is the most cheesed off I have ever been with the whole set up, and I've really felt kicked in the teeth by dear old (deleted) and the amount of time and effort that you put in - and this is over the money thing, and then for her to just say well you are not really worth any more, that really stuck in my craw -I felt like saying, "well up yours. I won't put in. I won't put my heart and soul in." But I couldn't do that.

This example indicates a high level of personal investment in the role of teacher, and the frustration felt when the teacher perceives a lack of support for her role by the employing authority. The idea of withholding her heart and soul in response to her perceptions of political infidelity is a powerful indication of the depth of feeling the teacher has for her role. More powerful still, is the way that she resists

this temptation through her own fidelity to herself as teacher, and the significance of the role in her life. *“I won’t put in. I won’t put my heart and soul in. But I couldn’t do that.”* She is saying that she could not, *not* put her heart and soul in. What might compel a teacher to continue to put her heart and soul into an activity that she finds increasingly frustrating and demanding? When people construct a strong sense of self and identity through their roles in life, disruption of identity, or threats to identity from external sources can stir resistance. Who we think we are, what we are doing, in what cultural context or behavior setting, including the geographical context, is closely aligned. Perturbation of this alignment confronts one with a conflict of self in context.

This brief example was a seed for the generation of this category. Further analysis of the data revealed patterns that pointed to the significance of participant’s sense of self and the ways that their perception of their roles supported their sense of self through identity processes.

6.3.3 Identity Constructs

Identity as a construct in popular discourse, and across a range of disciplines in the social sciences, has been critiqued as being almost useless, so complicated is the conceptual tangle that surrounds the idea (Beauchamp & Thomas, 2009; Olsen, 2008; Stryker & Burke, 2000). Despite this theoretical and conceptual complication, identity is still the word most often used, to name those processes that give the subjective experience of a coherent being, in a changing environment (Olsen, 2008).

The idea of identity in the context of the teaching profession has been well theorized and empirically researched (Alsup, 2006; Battey & Franke, 2008; Beauchamp & Thomas, 2009; Olsen, 2008; Ronfeldt & Grossman, 2008). It has been especially considered in the context of the phenomenon of teacher self-efficacy and burnout (Skaalvik & Skaalvik, 2010). A considerable body of literature exists that interrogates the concept of professional identities for teachers and how these evolve over time (Battey & Franke, 2008; Olsen, 2008; Ronfeldt & Grossman, 2008). The value of researching teacher identity is well expressed by (Olsen, 2008), due to its potential to highlight the holistic perspective of teachers as they are constructed in social, psychological, professional and situated terms. Teacher identity, as demonstrated by (Alsup, 2006) involves discursive processes, is fluid, evolving and socially constructed, as well as being substantially colored by an individual’s personal histories and identities. In the sense of being socially constructed, identity is both attributed to a person as well as constructed by them in the social context. Simply occupying a particular social role can mean that others ascribe an identity to you that may, or may not at all, be congruent with one’s own sense of self. Being a teacher is one role in society that can be a source of identity tensions for individuals.

The role that place; the physical, social, emotional, cognitive and behavioral milieu; plays in the expression of identity has been the subject of concern of environmental psychologists throughout the latter part of the 20th and into the 21st century. From studies of territoriality and identity (Brown, 1987), to Proshansky, Fabian and Kaminoff’s (1983) theorization of place identity, to Twigger-Ross and Uzzell’s (1996) application of Breakwell’s (1986) model of identity processes, to Devine-Wright and Clayton’s (2010) introduction to the special issue of the *Journal of Environmental Psychology* on place, identity and environmental behavior; identity and its relationship to the environment has been a core concern of the discipline.

Identity as a construct in psychology and sociology more broadly, has evolved into a range of perspectives from the purely intra-individual (cognition, affect and behavior implications) to the social-transactional and contextual (Bonaiuto & Bonnes, 2000). The idea of social or situated identities, is also well researched in the sociological literature, with symbolic interactionists making a major contribution to this field (Charon, 2010).

Environmental psychology also addresses the complex field of how humans develop a sense of self that is stable and enduring, and gives meaning to their experience of the environment, and their interactions with it. Place identity has emerged as a significant construct in the Environmental Psychology literature and is being refined in an ongoing fashion due to the application of multiple research paradigms with associated epistemological perspectives (Auburn & Barnes, 2006; Devine-Wright & Clayton, 2010; Groat, 1995; Janz, B. B., 2006; H.M Proshansky et al., 1983; Twigger-Ross & Uzzell, 1996).

Roles, like identities are subject to socio-cultural influences interacting with cognitive, affective and behavioral aspects of individual psychology. How one teacher interprets the multiple roles contained by the overarching role of teaching, is different from another teacher’s interpretations. These interpretations are not static, but can be relatively stable. The context in which the roles are carried out is a significant influence on how a teacher experiences identity and its processes: self-esteem, self-efficacy, distinctiveness and continuity (Twigger-Ross & Uzzell, 1996).

From a systems-oriented, transactional-contextual, person-in-environment perspective, how any individual teacher will behave in the context of their professional roles will be determined by the interaction of a number of mutually shaping variables (Wapner & Demick, 2000; Werner & Altman, 2000). These include Person X Environment and Environment X Person variables that can be grouped as in the following table. Each variable includes sites of possible perturbations to existing person-in-environment systems that can trigger critical transitions (Wapner & Demick, 2000, pp. 21-22). From this perspective, “A potent perturbation to any part of the person-in-environment system at one or more levels of person and environment is expected to impact the system as a whole” (Wapner & Demick, 2000, pp. 21-22). Chapter 2 which outlines the conceptual framework that informs this study describes the transactional-person-in-environment paradigm in detail.

Table 6-1 The systems oriented, transactional-contextual, person-in-environment perspective

Person X Environment	Environment X Person
Physical (Biological) <ul style="list-style-type: none"> • Developmental profile • Health Status 	Physical <ul style="list-style-type: none"> • Objects • Changes in settings • Evolution through industrialization, urbanisation, generational advancement • Impact of natural events: disasters • Relocation

Psychological

- Body experience
- Self experience

Living Organisms

- Peer relations
- Family
- Neighbours
- Co-workers
- Teachers
- Community
- Animals
- Pests

Socio-cultural

- Role
 - Work
 - Financial
 - Educational
 - Marital
 - Religious
 - Political
 - Cultural
 - Ethnicity
 - Gender

Socio-cultural

- Economics
- Educational
- Legal
- Mores
- Political
- Religious
- Organisational leadership

The schematic presented in Table 6-1 above, has implications for explaining how teacher identity and role behaviors impact on the way they design, manage and maintain learning spaces. It also melds the ideas of personal and professional identities and roles, through the inclusion of variables that relate to, but impact on both domains via the operation of system dynamics.

Variations in teacher identity, and role maintenance, have an impact on how teachers design, manage and maintain learning spaces. For instance, vocal cord damage is common in the teaching profession. A teacher who experiences vocal cord damage needs to rest the voice as much as possible (Physical – biological). Not being able to use the voice to provide instructions to a class of young children can cause a teacher to feel insecure in themselves as professionals (Psychological – self experience – self-efficacy; self-esteem). The role that the teacher is employed to do is organizationally inflexible and there may no opportunities for redeployment into other roles (Socio-cultural – work, financial). The teacher may respond by rearranging the learning space so that it affords less flexibility pedagogically, but tighter control over student behavior and an emphasis on individual seat and book work over collaborative, group problem solving and project activities (Physical Environment; Living Organisms). A change in one part of the system that is the learning space and its occupants, impacts on other aspects of the system. The changes just outlined may impact negatively on the teacher’s professional identity, and this will possibly spill over into their personal life and further exacerbate the triggering event (Physical biological; Living Organisms; Psychological; Socio-cultural PxE and Socio-cultural ExP).

The four substantive categories that I have identified in my data analysis for this study can be viewed in a similar way to the holistic transactional-person-in-environment model. Using the example of vocal chord damage, the impacts of this event in the life of a teacher could impact on how they orchestrate learning, how they

operate in and experience relationships, how they maintain and experience identities and roles, and how they experience being in space and time. Each dimension has an impact on the other dimensions. A teacher's response to her condition may initiate actions to change the physical environment to accommodate her new biological state. Changes to the physical environment impact on how the teacher behaves pedagogically. This impacts on relationships and feeds back into identity and role definition. Changes to the physical environment also impact on the subjective experience of being in time and space for all the occupants of the space and thus impact all the other dimensions. Ultimately, the interaction of all these dimensions of the person-in-environment system, influences the participant's sense of place.

Should the organizational context afford the teacher the use of a microphone and multiple speaker system at its cost, to support the teacher, the outcomes could be very different for her. An accommodation of the physical environment, by the organisation (through purchasing and installing a digital microphone and speaker system for the classroom), influences the teacher's sense of self and her roles, and the way she is able to orchestrate learning, maintain relationships, and experience herself in space and time. She is able to continue working, reduce fatigue and allow her voice to recover, maintain a sense of professional and personal identity, and experience continuity of self in context. Resolving the perturbations caused by the development of her physical condition to the alignment of her sense of self in the context of the teaching environment and her roles, may afford her better long-term health and wellbeing outcomes.

6.3.4 Sensitizing Concepts

The various theoretical and empirical perspectives discussed above, served as sensitizing concepts for me as researcher as I conducted the analysis of the data provided by the participants of this study. They serve the function of a theoretical canvas upon which I constructed my own painting of this category. This category, was generated using grounded theory methods and highlights the teacher's need for experiencing congruence between their sense of self-constancy, their identification with the profession of teaching and its primary goals, the personal qualities they bring to the context, and the need to experience a sense of identification with, and belonging to the place that they occupy through their work.

Nothing is generated in a contextual vacuum. However, as researcher, I did not consciously refer to formal theories of identity and roles while initially analyzing the data. Extant theories of identity were not organised into any rubric against which I analysed the data. I applied the constant comparison process, and named the category according to what I saw as being, the most appropriate term, to communicate what the data conveyed to me. My primary concern was with what was 'going on' in the subjective reflections of participants. As the analytical process progressed and I generated more memos to explore the connections I became aware of between extant literature, theories and my own experience, I began to include these influences consciously in my theoretical sensitivity.

I saw a pattern of codes in the data that somehow related to the teacher as a person with a particular identity, who brought personal qualities to bear on the design, management and maintenance of the learning spaces they occupied as teachers. It is worthy of note that apart from two sites where two teachers worked collaboratively to manage a large group (50-60 students), all the other teachers

worked in contained classrooms with rigid boundaries. In these spaces, the teacher was responsible for how to set up the learning space given certain inflexible features such as position of doorways, windows, fixed boards for writing, ceiling fans, air conditioning units and such. There was a strong sense of ownership by teachers of the spaces they worked in. It was a type of appropriation of the space and it was clear that the teacher or in the case of the two collaborative teaching sites, teachers, were primarily responsible for the space. Other teachers would be very reluctant to alter the space even if they were to occupy it temporarily, during a teacher absence, for instance.

Appropriation is a term used in relation to attachment and identity by Werner, Altman and Oxley (1985) and by Dovey (1985) as one of the dialectics that inform our understanding of the concept and experience of home. In both cases, appropriation contains within it, a sense of being transformed by our appropriation, an act that involves both giving, through caring, and taking, through our identification with the world in which we are embedded. This process of appropriation points to identity in action and further sensitized me to the formulation of this category.

6.3.5 Evidence for the category

The participants in this study demonstrated a mindfulness of how they brought personal qualities into the classroom environment. Some personalised the spaces with artifacts. Some commented on how their personalities and communication styles expressed themselves in the environment and had an impact on it. One teacher commented on her size in physical and personality terms, indicating that these qualities had both positive and negative aspects in the context of the learning space. Some indicated that the learning spaces they designed were an expression of their highly valued philosophies that related to their role as educators. There was a sense of personal and professional identity embedded in the participant's comments in this regard.

Teaching is a socially sanctioned role, regulated by acts of Parliament and statutory authorities in the States and Territories of Australia. At the same time, each teacher brings their own interpretation of the role into the learning space and their personal, conscious or out-of awareness epistemologies, which shape teaching behavior. The teacher 'self', their ideas about what their roles are, and how best to carry them out, their sense of accountability to those they serve, and the employing authority they work for, their depth of experience, extent of pre-service and postgraduate education, and a host of personal qualities, values, and experiences outside of the professional context, all shape in part, how a teacher behaves in relation to the learning spaces they operate in.

A teacher's interpretation of their roles, along with personal qualities, influences how they manage learning spaces. The way that an individual perceives their roles in both personal and professional contexts allows them to align their behaviors in those roles with their ideas about how the role needs to be fulfilled to achieve the intentions it serves in a social setting.

Values too, play an important role. Values are inherent and evident in all four substantive categories. They influence how teachers experience identity and role, how they relate to others, how they experience space and time and how they

orchestrate learning. Alignment between personal and professional values and behaviors, creates the optimum conditions for a sense of continuity of self in the learning space context. Conflicts between values, behaviors, and the physical environment are experienced as an assault to one’s sense of self in context. Such conditions also constitute a threat to an individual’s sense of place through dissonance between place identity, attachment, and dependence.

Table 6-2 provides a summary of the substantive category being explored here. Each sub-category and their properties can be deconstructed back to incidents of the data in concert with the constant comparison process of analysis. In other words, these are patterns in the data. Like the dynamic relationships between the four substantive categories themselves, the sub-categories and their properties also exist only in relationship to each other. When a teacher sees herself /himself as a life long learner as part of their role, it is a reflection of their philosophy, and it impacts on the degree to which a learning space is considered static or dynamic and evolving. It influences the extent to which a teacher empathises with the learning experiences of students, and it influences how the teacher sees the learning space as a place.

Likewise, how a teacher engages in personalizing the learning space can reflect how they are influenced by reference groups, how they resolve tensions between their philosophy and spatial qualities, the extent and importance of their emotional involvement in their roles, and their sense of place.

Table 6-2 Overview of the substantive category: Maintaining personal/professional identities and roles.

Substantive Category: Maintaining personal and professional identities and roles.

Sub-categories	Properties
Teaching as a professional role.	Socially sanctioned and State regulated role. Life Long Learning Individual interpretations influenced through reference groups. Tensions can occur between space and interpretation of roles.
Philosophising	Promoting: ownership; self-regulation; sense of belonging; self-control. Learning: through play; through inquiry; through authentic projects; through focused instruction; through engagement with technology; through self direction Teaching as: instructing; as guiding; as facilitating; as managing; as caring and nurturing; as understanding learners; as responding to diversity Valuing: Pro-social behavior; wellbeing; self-regulation; an ordered and predictable environment; harmonious relationships; scholarship; inclusion and social justice; aesthetic qualities of the environment. Resolving tensions between personal philosophy, learning space

	provisions and systemic demands.
Learning space as an expression of self.	Personalising Values expressed Alignment of philosophy, configuration of learning space and personal preferences.
Emotional labour	Caring Nurturing Empathy Looking forward Concern to make the experience of school a personally fulfilling one for students. Personal identification with roles
Sense of place	Place identity Place appropriation Place attachment Place dependence

6.3.5.1 Teaching as a professional role

Teaching is a regulated activity in Australian society and has a high profile politically and in the media. Teaching is not only regulated through statutory authorities, but teachers are scrutinized in ways that other professions are not. It is a highly visible activity in communities and accountability is constantly reinforced. Currently in Australia, National Professional Standards are replacing existing state based standards that have existed as part of the state regulatory authorities role, to maintain the highest standards of professional behavior possible in the teaching workforce. Where employed by state education authorities, teachers are also subject to state-based public servant codes of conduct, which place restrictions on an individual's personal behavior in community contexts. Teachers are also required to be tertiary trained, typically completing a Bachelor's Degree in Education that is equivalent to four years of study in a university setting.

Learning spaces are where teachers conduct their primary roles as part of daily workflow. These spaces are not private, nor are they entirely public. Teachers regulate learning spaces, and considerable variance exists in how open or closed the learning space is to other staff, children and the public. They are however, spaces that are not entirely private and are subject to the gaze and scrutiny of a range of people who have various interests in how the space is designed, managed and maintained.

Cleaners for example can exert influence on how furniture is arranged in a space by asserting their rights to be able to do their job in a safe and reasonably efficient way. Principals and other staff who might use the space on an occasional basis expect it to be well ordered, clean, safe and able to be used for multiple purposes according to the activity to be conducted. Parents have expectations from their own experience with schooling about what is best for their children and can exert considerable pressure on teachers to be conservative in their approaches.

Though teachers share a common professional lexicon of language and skills, there is a great deal of variance in teacher behavior in context. Hence, a learning space can present challenges for one teacher but not the same challenges for another. In the following excerpt, P4 indicates how the learning space design can present challenges for relief teachers. These challenges are in part related to a teacher's interpretation of their roles. In the open plan refurbished space that P4 and P5 shared, a relief teacher who saw their role as being primarily about transmitting knowledge to students in discreet curriculum areas would find the inquiry / project based learning environment of the classroom a challenge. The experience of P4 was that sometimes relief staff attempted to resist the learning space by corralling students into specific areas for instruction. This could be source of tension between those teachers, and students who were used to greater freedom to move and engage with a variety of spaces throughout the day.

In P4's interview, she referred to the need from time to time, for relief teachers to work in her learning space, and the challenges the space presents to these teachers:

...people might say today when there are two supply teachers up in our room and one of them has been up there before but because it's a double class in the one room you know you are explaining the program and trying to give them the routines and procedures and things and you think wow we do sort of have a lot of managing happening here in this room just for one day. Its not until you reflect and go about it just that you think we can manage.

(Interviewer) Just on that, before we sort of go through looking at your classroom space, when you have a situation where people come in to do relief work, supply work, are they bamboozled by the space or is it...

Oh I think so.

Oh yes they do and I would too. I would if I was a supply teacher coming in particularly when the other teacher isn't there like that time when P5 and I went to a conference just before Easter the two of us were away for two days and one of the teachers that is there today was there but it often happens that the both of us aren't there so that is very daunting I think for those supply teachers. So it must be very hard, as much as you leave the written notes and everything like that I think it would be hard...

(Interviewer) What do you think is the source of their difficulty? Is it just because it's a different layout? What would cause them the most problems?

Well I haven't actually asked but just thinking about it maybe it's the fact that there's two of them in the room and you know they have to actually teach in front of another teacher, perhaps, whereas a lot of single classes that doesn't happen.



So I think its getting comfortable with that idea that you know you've got someone else there even though they mightn't be looking at you but you think might be and listening and that sort of thing because we don't always have two separate groups in the room. We do sometimes but sometimes they're all together so maybe its that factor, its probably that plus when they are in groups, where the groups should go and the procedures that we have in place, and you know kids being kids they'll try

anything out when their teachers aren't there. Not all of them but some of them will.



I think it would present a challenge definitely because kids are not sitting at individual desks. Even though they do have their set spot in the room, (10:50) campfire and water and coal. There are no two desks pushed together which is often in a classroom. They're at tables so you've got that more in four you know setting. Perhaps that's built into the size of it. Where you stand because all these things happened to us when we first moved in, where to stand, for all of them to hear you or which whiteboard to use so they can all see and things like that. But we took all of term four last year when we moved in to get all that sorted out in our own minds. And how kids work in groups and when they need to be independent and how they operated in base camp and that sort of thing.

How a teacher interprets their roles will influence their design, management and maintenance of learning spaces. P4, P5, P6 and P7 all made a transition from very traditional learning spaces designs to refurbished teacher-decentering spaces in the space of a year. In their previous spaces they focused on tight behavioral control, maximising productivity, minimising distractions and playing a privileged role as transmitter of knowledge and skills to students. The refurbishment of their learning spaces into open, multi-zoned, teacher-decentering spaces, challenged these teachers to reflect on the fundamentals of their roles as pedagogues. They engaged with this challenge individually and in teaching teams. Through the application of pedagogical problem-solving, reviewing their ideas about curriculum priorities (product to process focus), considering the transition from 20th to 21st century education priorities, looking forward to where their students were moving to over time, and considering how children could participate in the planning process, they designed learning spaces that radically challenged their previous role definitions. They shifted their role focus from being the center of the learning environment to being much more a manager, facilitator and guide. In these spaces, students take a far more proactive role in their own learning and the focus is shifted from about learning things, to learning how to learn. This approach was closely aligned with the role interpretations of P10, P11, P2, P3 and P13. It certainly seems closely aligned with the early childhood teacher participants, who clearly reflected an interpretation of child-centered approaches to the role of teacher.

In contrast, P12 clearly articulated her role as follows:

P12 (from coded, recorded interview)

P12C16 Set up of space more to do with behavior management – if I can get them behaving well then everything else fits into space.

P12C17 Get things under control and then eyes at me and then things go well.

P12C23 Don't want to use group / pods – aspect of philosophy. It's my job to make sure they learn and my job to teach them.

P12C24 Group-work at end of term only as a treat.

P12 Synthesis statement of main concern:

Creating a well-ordered space that focuses students on learning that is orchestrated by a motivating and animated teacher concerned with achieving outcomes for every student.

The synthesis statement of main concern for P3, P5, P8 contrasts with that of P12. Looking at these statements of main concern provides a new source of material for seeing how teacher role interpretation is reflected in learning spaces design, management and maintenance. P8 is a primary special education and resource teacher at the same site as P5. Variation is a feature of the data. Despite the variation between all individuals in the study, they are all engaging in the process of maintaining personal and professional identities and roles.

P3 Creating an emotionally safe space where children feel safe to take risks in learning and can learn to self-regulate with the guidance of a caring adult.

P5 Creating a learning space with multiple sites that students are able to choose to engage with in order to be able to complete learning tasks. This space affords teachers opportunities for ongoing professional learning as well as opportunities for students to engage in learning in social groups, as individuals, and in teacher directed groups.

P8 Creating a space in which a diversity of children can relate to each other and learn from those relationships, that is friendly and welcoming to demonstrate to children that they are valued and worthy of adults time and energy, that is designed with the characteristics of children in mind, and that affords accessibility to a full range of learning experiences for all students.

6.3.5.2 Philosophising

Philosophising is the pattern of reflections used by primary teachers to indicate their beliefs about how children learn, about the qualities they wish to promote in students, about the best way to teach and the values they consider important in the context of their roles. Teachers express their philosophies through how they design, manage and maintain learning spaces. Their philosophies help them to create spaces in which they can fulfill their roles as professionals and provide a sense of continuity of self that crosses the professional / personal boundary. When tensions exist between the physical environment and the teacher's philosophy, teachers are faced with a dilemma of identity. They must resolve this tension in order to function so that self-efficacy and self-esteem can be supported. A teacher's philosophizing also contributes to their distinctiveness. Some philosophical positions are shared among groups of teachers.

Early childhood teachers seem to subscribe to a view of learning that values play, and allowing the child time to develop cognitively, affectively, socially and physically in their own unique ways. Understanding the learning process for individuals and working to facilitate development is a typical focus for early childhood teachers. They express and enact a child-centered view of education. This has significant implications for how early childhood teachers, design, manage and maintain learning spaces. The photographs below exemplify this. These affordance rich environments provide many opportunities for children to learn by exploring the possibilities of space and time under the careful, but distant guidance of the teacher.

The teacher in this setting carefully designs the learning space to provide maximum affordances across the learning domains: psychomotor, affective, cognitive and social. Engagement with the environmental affordances of the learning spaces helps children to reinforce existing and develop new effectivity sets.

P13C12 Learning space reflects teacher's views on how children learn – through play. Hands on – 'Experiential'.



P2 reflects on the tension that can occur when a teacher's philosophy of learning is challenged by the very application of that philosophy. In the example below, P2 has applied her philosophy that children need to have some control over the environments in which they learn and ultimately need to become self-regulating in those environments. The unexpected result was the expression of children's internalized scripts about what a classroom should look like. Perhaps this was the influence of looking at the classrooms of older students or simply an expression of complex cultural learnings from a variety of sources. It seems that the 'classroom' discourse is learned early in a child's life. Fidelity to the teacher's own philosophy required that she accept the result in the short term.

P2 (from interview transcript)

I'm actually going to start with one that looks a bit negative to me - but I took this photo because we had rearranged the desks. I don't have, or the kids don't have tidy trays under their desks so they don't have designated seats to sit at and when I set up the room before the children had come in, I had set them up all up more in this sort of arrangement (groups). But then we moved the furniture for some reason and the children actually put the desks back that way and that really surprised me because I had thought that they were much more grouped. When I set it like this I have a row of desks at the front and then smaller groups and the reason that I set the room up like that is these kids are just learning to write and copy things from the board and that sort of thing and the easiest way for them to transfer that information and the most comfortable way is if they are sitting face on to the board. Even then there are reversals and that sort of thing that they have to cope with. It is different to looking over your shoulder at something so for children to copy from the board I



like to have that front row of five of six desks for them to do that. But my philosophy is more that the children are able to learn from each other so that's where I tend to put the tables in groups. So that's when this really surprised me, when they decided to put them in rows like that. But I left it like that for a little while cause I could cope with it because it was what they had done.

The photos below show how P2 generally configures furniture in her learning space.



Later in the interview P2 returned to her philosophical beliefs, and the tensions that sometimes arise between these, and her actual practice as a teacher in context.

P2 (from interview transcript)

I think the children need to have some power in the whole situation, whole set up and I think the early years curriculum guidelines is very strong on that philosophy. I'm still in, you know in a stage of, I'm just probably more of a traditional stand up the front teacher. But I see the value and the joy that children have in learning and being a part of our class. I hope I've always had made an attempt to ensure that children are safe and happy and I think that I've done reasonably well with that but this is just this sort of philosophy. I just think it's the way it should be. Kids are learning and I'm learning still and there's been studies that show, like long term studies that have shown the children who have been in classroom like this, where they've had power and some say and they understand that they have rights. That they have a voice. That they'll be listened too, but that they also need to respect the rights of others actually, at the end come out as being citizens who are more likely to participate in society as a productive citizen in it's not just a person who gets a job but it's a person who will move on to working well within their community. That they understand that they actually have an obligation.

Further into the interview:

I'm not the person out the front all the time, sometimes I am and I have all the power or most of the power and that's just the way it is with me. I still very strongly believe that explicit teaching is vitally important. But I've also got to accommodate the little people who are in front of me and that they also have lots of knowledge and

they have rights. If they have the practice of exercising their rights, and exercising power in this situation, then how much better off are they going to be when they get the opportunity later on to make responsible informed decisions for their life?

P16 makes a direct statement about the importance of philosophy in her classroom. She ties philosophy to identity as well.

P16C15 My room is a reflection of my philosophy and of my personality. It is set up as a reflection of my personality.

P16C17 You can tell how a person lives by their classroom.



P10 and P11 have been collaborating as teachers for a number of years and have developed, through professional reflection, a philosophical statement that guides them in making decisions about how to design, manage and maintain learning spaces.


P10 and P11 share a philosophy that promotes the learner as a self-regulating and self-determining being. They think that learning occurs within a 'potentiating learning milieu' and they intentionally design, manage and maintain their learning space by applying the principles of their philosophy. The main concern that I synthesised for P10 and P11 was:

To intentionally use available space to support the development of a social and learning milieu that values self-determination and autonomy as collective and personal motivators to engage in authentic learning. (A milieu comes from the French - mi (mid) + lieu (place)) Space as a motivator.



Researcher comment: Regardless of the physical space provided for these teachers, their fidelity to their philosophy and its principles of motivation guide them in how the space is enlivened and becomes a pedagogical feature in itself. There should be an alignment between the curriculum, the pedagogy and the space. The affordances of the space need to match the intentions of the teachers so that effectivity sets are supported and built on.

P8 works as a special education teacher in a primary school. This teacher has established a homeroom along a garden theme for her children with high support needs. P8 also provides collaborative consultation services to her primary teacher peers to support the inclusion of students with disabilities in their classrooms. Her philosophy appears to be founded on social justice principles of identifying barriers to children's access and participation in the curricula and addressing these. Equity is a concern for her and recognition of the inherent value of all human beings, along with all the rights that go with this, is a feature of her discourse.

<p>P8 (from interview transcript): I'm a group person...if I worked in a conventional classroom I would have group desks.</p>	<p>Researcher notes:</p>
<p>P8 (from interview transcript): The first thing I want to say about the space is that it was very, very important to me for the children and the parents of the children who use the space to see that they were valuable to me because sometimes I think that parents of children with special needs think they're almost shunted and pushed away, unwanted. The room before it was redone was horrible, it was brown it was old, it was dusty, the walls had smudges and you know yuck, and when we had certain kids coming with really high needs I just said to D I don't want them in there. If they were my kids I'd want them to feel they were valued enough to have space they were worthy of.</p>	<p>There is an 'epistemological slip' showing in this statement. Being a "group person" indicates a set of beliefs about the conditions under which students learn best.</p>
	<p>This teacher values her students and wants the external learning space to reflect this valuing to all who occupy it: students, teachers, aided, parents, visitors. This humanistic philosophy is very apparent in how this teacher refers to her students.</p>

Philosophizing is a powerful property for maintaining identity and roles for primary teachers. Teachers are motivated to align the learning space environment with their philosophies of learning, of education and of schooling. When tensions exist between what is available environmentally and the philosophies of the teacher, resolution of the tension can occur through 'making do', compromising, accepting or through advocating and negotiating. Many primary schools in current times spend considerable energy and resources on generating a whole of school pedagogical approach. Without a consideration of individual teacher philosophizing and the ways that time and space can create tensions with this philosophizing, resistance, albeit of a covert nature, may be an unintended outcome.


6.3.5.3 Learning space as an expression of self

The idea of place appropriation introduced in 6.3.4 above helped me to understand how primary teachers insert themselves into the learning space and how it becomes to various extents, a reflection of their identity. Though space appropriation is associated with territoriality and defense, it is also a dynamic involved in the holistic process of developing a psychological sense of place through the transactions of place attachment, place dependence and place identity. I have elaborated on these constructs in the following section. Place appropriation, “literally means making (something) one’s own and taking for one’s own use, presupposes that it is features of the spatiotemporal environment that arouse, foment, afford, and sustain environment-related intentionality” (Grauman, 2002, p. 105).

Place appropriation can have positive and negative affects and occurs at the global scale as well as at the scale of microenvironments such as learning spaces. A person’s place identity is not necessarily tied up with appropriation of place at the physical level. One can experience place identity, attachment and dependence through the restorative effects of being in nature that is public space. Perhaps a symbolic appropriation occurs in this context. Statements such as the following serve to exemplify this idea: This place feels like home. I love it here. We come here often, it is our place away from all the troubles of life. We have to defend this nature reserve from development. It is too important to leave unprotected. Certainly, people are prepared to defend public space through protest, through legal actions and through actual occupation, if only on a temporary basis.

In primary schools, despite the regularity of the behavior settings that easily communicate where you are and what goes on in these spaces, there is often evidence of personalization of the space by the teacher. Students too personalize their space and can be active defenders of their space once entrenched.

P8 indicated that she tries not to ‘flick’ her detail onto everybody else, however, the selection of the colors of the walls and furniture in the learning space she occupies would seem a bold statement at some level. In my experience not many teachers are given the opportunity to make decisions about such features of the learning space as wall and floor colour.

<p>P8 (from interview transcript): <i>I try not to flick my detail on everybody but yes I like, I said glitter is my thing if you go into my actual office space you will see lots of pink things and a bit more pink and glittery there because it had to suit boys too. That was the thing. I couldn't be too pink but that's why I got the purple.</i></p>  <p>P3 (from interview transcript): <i>I don't like clutter - I actually went and cleaned the whole room from top to bottom when I first got here because it was just rubbish everywhere - you couldn't find anything because it just all over the place</i></p>	<p>Researcher comments:</p> <p>Teachers personalize the learning space in many different ways to reflect their appropriation of it and to make it something that they and their students can connect to.</p> <p>Making a space ordered and arranged in a logical fashion was important for P3. It helped her to feel more comfortable in the space.</p> <p>Personal qualities of the teacher can be used pedagogically.</p>
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P3 (from interview transcript): *But yeah I guess I am an organised person. I guess that's the way my brain is. I always say to the kids, my brain is like a filing cabinet but not everyone is like that. Some kids find it really, really hard to organise all their thoughts and ideas and so we've actually worked a lot with that and we've found that it has worked with a lot of kids to just even acknowledge it.*



P3 (from interview transcript): *I don't like - it's probably why I like teaching outside (laughing) cause I don't want to be trapped in - it's probably more about me! I'm telling you all about myself - oh how scary!*



I interviewed P3 at her home where we sat outside on a very comfortable space that transitioned the gardens outside through the inside of the house. P3 reported that the family ate most of their meals out in this space.

P3 enjoys taking her students outdoors for learning activities. It is a personal preference and in a way she is engaging in personalising the space. This teacher is also responding to her interpretation of her student's needs through this approach.

P3 shared a part of her learning space with an itinerant teacher who wasn't often present to use the space. Despite this, P3 became very aware of the

appropriation of the space through the research process and sought to avoid any conflict through careful negotiation.



P3 (from interview transcript):

Researcher: This space looks quite different.

P3: *It actually does and you know why? Because it's not mine - I utilise the area but it's actually the German teacher's room and so consequently it's totally different and I didn't realise it so vividly until I saw the photos and I went oh it is really quite stark isn't it?*

... another teacher who is very particular

The only thing I said to her was I moved the computers in there because that made more sense for me and she agreed. This board used to be along here so it used to block off the room so I said to her it's really a bit of a hazard because I had a child on crutches so I said do you mind if I move it on the other side? So I tried to negotiate changes with her and we did do that. We moved the printer to a more usable position over here instead of being sat on this so you know what I mean just common sense kind of things.

She's actually (pause) itinerant teachers are really funny. They only work about fifteen hours a week and the rest of the time they are at their home school and this her home school so this is her office in here and she is there and I tend not to use this room when she is there. Mainly because I think it's probably disruptive. I use the computers but not the space - I tend to use the space more in the mornings but not in the afternoon. Not hardly ever in the afternoon. I think that's just because it doesn't feel right to have her sitting there and I feel like it's encroaching on her area. I just do. Interesting. I'd never thought about it but it's really nice when we do because we do a 15 min relaxation mediation kind of thing ...

This idea of space being somehow occupied or owned by teachers and also students was reflected in comments made by P1, P2, P3, P4, P7, P12, P13 and P16. It contributes to the teacher's sense of self and connects their personal and professional identities in such a way as to afford continuity of self across contexts. This sense of being attached to the space physically as well as psychologically affords teachers a degree of comfort and security. Feeling comfortable in the space where teaching is conducted promotes a sense of safety for teachers. The participants raised various issues in relation to this. Appropriating or making boundaries in space, not trespassing on other teacher's spaces, the issues of being visible, of being observed, the need for privacy in a what is essentially a semi-public space were all mentioned. Teaching is a creative act and the teacher themselves, as embodied beings are the essential tool in the learning context. A sense of safety in that role is important for a teacher's performance.

Personalising the space affords a sense of connection, continuity of identity over time and contexts, and in this way is a protective factor for teacher wellbeing. One salient reminder of this comes from P4 and P5 who share a learning space and who identify with each other strongly as teachers and who are also good friends. They provided the photo below of a bench seat which was a gift from their year seven class to them and to the space they had shared. The gift was a symbol of enduring presence and identification with the space in which so much experience had been shared and that contributed so strongly to a sense of self for students and teachers alike.



6.3.5.4 Emotional Labor

Teaching children in the age range five to thirteen years is a very personally engaging profession involving a degree of ‘emotional labour’ (Hargreaves, 1998, 2001; Harvey, Bimler, Evans, Kirkland, & Pechtel, 2012; Noddings, 2002). Emotional labour suggests a presence of an affective dimension to the work that teachers do. Caring, nurturing, empathizing, being responsive to others, are concepts that I found sprinkled throughout the data for this study. Participants indicated that they saw the act of establishing, managing and maintaining a leaning space as in part being an expression of care for what students would experience there, and that the space would contribute to the welfare and development of children and young people in a holistic way.

Caring is a quality that seems easily recognized in some people but difficult to define. In generating this property I considered two dimensions of caring: caring about and caring through. Primary teachers in this study demonstrated caring about the quality of the experience that their students had at school. A positive experience of school was associated with comfort, being safe (physically and psychologically), acceptance, pro-social behaviors, participation in an engaging curriculum, engaging teaching and skillful pedagogical performances, creating a home-like environment and being sensitive and responding to the social emotional wellbeing of students.

Caring is communicated through looking forward (concern for the future welfare and coping of students), being responsive, guiding, being available, encouraging, nurturing, respecting, sharing power, being inclusive and through intentionally designing learning spaces to be comfortable, inviting and homelike places. Hence, caring transcends the qualities of relationships and can be seen in many facets of primary teacher behavior. If a teacher did not care the qualities of relationships may well deteriorate. So too would many other dimensions of the environment.

Primary teachers may include adjectives such as caring and nurturing in their descriptions of themselves when speaking about their roles. One of the roles of the

teacher is to care. To fulfill this role they need to care about the welfare of students as individuals and as a group. They demonstrate this caring through the qualities of relationships they develop with students, through the ways they orchestrate learning for individuals, through the ways that they influence the experience of being in space and time, and through their own identities and qualities of their role fulfillment.

Caring in all these dimensions involves emotional labor. This concept indicates that a primary teacher's emotional involvement with their work can contribute positively to their identities. It may also contribute to stress and erode one's self-efficacy. With any threat to self-efficacy comes psychological defense. As an educational professional I have been advised many times by peers to not care so much. I have also had pre-service teachers report to me that their professional experience mentors advised them to not get involved with children or care too much about their lives. I see these advices as often being a defensive approach taken by others who may well have been hurt or had some negative experience when they had cared.

Indeed, in one memorable instance for me, a pre-service teacher returned from her school to report that her mentor was distant, cold and uncaring and advised her to also be distant from her students. The pre-service teacher was perplexed by this advice as it ran so counter to that being given by other mentors and her university lecturers. As it happened I recognized the name of the mentor and recalled that some years previously, a student brought an allegation of sexual assault against him. I worked as a guidance officer at the school at that time and recall the teacher as being a positive, caring and professional teacher of considerable skill. The allegation was proven unfounded but he was shifted out of the school. The experience was traumatic and eroded many of the principles he had hitherto ascribed to, including his identity as a teacher. Self-efficacy is not just about your evaluation of how well you do your job. It includes the ascription of meaning and importance to your position beyond your contribution (Skaalvik & Skaalvik, 2010).

Teacher burnout involves the phenomenon of emotional exhaustion in part attributed to chronic stress. Emotional exhaustion is accompanied by depersonalization and a cynicism towards students, staff, families and systems. Negative self-efficacy attributions accompany these two qualities to form a triad of distress that many teachers never recover from fully. The power of emotion in teaching is considerable and teachers are required to keep their emotions closely monitored. Intimacy is required, yet this must be monitored closely to ensure that socially appropriate boundaries are not transgressed. Anger is a natural emotional response to being abused, or having your person attacked, yet teachers are required to maintain calm and exercise professional integrity in the face of very emotionally charged and personally affronting situations. Even in daily emotionally charged situations such as having to show encouragement and compassion when frustration and resentment may be bubbling under the surface, the emotional dissonances experienced by a teacher can be costly. Hence, emotional labor can be defined as follows by Isenbarger & Zembylas (2006, p. 122):

When emotions are underplayed, over-played, neutralized or changed according to specific emotional rules (Zembylas, 2002b, 2003b) and in order to advance educational goals, teachers perform "emotional labour".

In the case of the primary teacher mentioned above, it is also noteworthy that the pre-service teacher being mentored reported that the classroom was oppressive,

with the teacher being highly controlling, restricting mobility of students, demanding silence, monitoring constantly and adopting a highly teacher centered didactic pedagogical approach. This was certainly not the picture of the teacher who I knew before the allegation. What I can see in this case is the interaction of the four substantive codes of this study at play. A perturbation to personal and professional identity and role interpretation impacts on the teacher's willingness to engage in emotional labor, and changes the teacher's approach to orchestrating learning, being in and maintaining relationships and experience of being in space and time.

Despite the variance in the ways that teachers in this study reflected on their main concern they all indicated to different degrees an attitude of care that provided a psychological context for the learning space design. Safety, comfort, and wellbeing are not achieved through the addition of soft furnishings or colorful floors and walls alone. Caring is communicated additionally through a teacher's willingness to engage in emotional labor in an authentic way and be willing to work with students towards solving problems and being genuinely present in their social and emotional lives.

P7 (from interview transcript):

I really want the kids to come to school and feel safe and feel and have – for school to be a pleasant environment for them, a happy environment for them that's the most important thing for me, if they don't feel that, I don't think they are in the right frame of mind for learning...

But warm and inviting... And secure and that's the most important thing. I've got kids at school, school is the happiest place it's the happiest part of their day and if I can make them just warm and safe and secure when they come here for those 6 hours of the day then that's a good thing. If they can learn in that time that's fine but they are happy and they are secure that's my point.

P3 (Synthesis of main concern):

Creating an emotionally safe space where children feel safe to take risks in learning and can learn to self-regulate with the guidance of a caring adult.

P3 (from interview transcript):

...it is quite threatening for some kids that struggle, plus there is a lot of things you have to do at desks. I do try to encourage kids to move around into groups. I said to them to bring in cushions so if they want to sit on the floor and have a discussion group that's really ok with me. Some of them like to sit on the steps. I just think you have to be a bit flexible in acknowledging who the kids are and what they like so that's why I include that.

P15 (from coded interview):

P14C20 Safe, secure, valued space – they are part of it and belong there – space can support them with issues – special needs, emotional outbursts. They are a group – teacher is always amongst the children – they get the help they need.

P8 (from interview transcript):

...this sort of stuff shows that we've thought about it and that we care what

happens for them in that space like I said for me it was a lot around value and valuing them in our school community, showing that value via the space that we've created so I think its successful.

6.3.5.5 Sense of place

When primary school teachers are allocated a learning space it is often for a period of a school year or sometimes several years. Often the allocation is based on the historical use of the spaces for different grade levels. Some spaces are specifically designed with the ages of children in mind, for instance, early childhood learning spaces. Usually the allocation of space is not something that individual teachers have a lot of voice in, though more senior teachers or teachers with a long standing occupation of a space may have more say than less experienced or newer members of staff. Often, the teacher is allocated a grade level, or levels, and a space that includes the physical room and its fixed zones and fittings. A room can have an attached wet area, kitchen, occasionally a bathroom, occasionally a small room for use by staff such as teachers' aides, support teachers, storage areas that are built in or mobile, a verandah space and spaces for storing student personal belongings. The room will also have an allocation of furniture that goes with it and is based on the number of students to occupy the space. The fixtures and fittings will include heaters, fans, writing surfaces, display surfaces, lighting, windows, doors, and shelving. Information Communication Technology is common in Australian schools in addition to the other variables already been mentioned. Desktop computers, electronic white boards, reprographic devices, projection systems, laptop computers, tablet computers, digital cameras and digital music devices may also be included.

As demonstrated by the images produced by primary teachers in this study there is considerable variation across all the dimensions mentioned and teachers have to cope with restraints in some instances and oversupply in others. Too large a space presents challenges the same way as does too small a space. The challenge for teachers is to work with what they have been allocated, to create a learning space that will help them to achieve their intentions according to the roles they have been given and their interpretation of these. The main concern generated from the data analysed in this study indicates that primary teachers are concerned to:

Create complex multi-faceted / multi-purposed spaces that shape, afford and optimize creative learning and teaching behavior, pro-social interactions, a positive contribution to identity, and having a particular focus on the learner as a self-regulating individual in a social context.

Resolving this concern is something that teachers do over time and energy is devoted to this resolution as part of the daily workflow of teachers. Initially a teacher is allocated a space and over time the space evolves into a place in which the occupants develop for better or worse, a psychological sense of the place through their being in it and experiencing its qualities; physical, social, emotional and learning; for a period of extended time. Over time, the psychological sense of place develops along with a sense of attachment to place, dependence on the place for meeting needs and an evolving sense of the place contributing to one's identities in context. All this occurs as the teacher is resolving their main concern through the four substantive categories outlined in this chapter. I elaborate on this in the following section 6.4.

In relation to maintaining identities and roles, place appropriation helps to explain how primary teachers create an environment that supports their identities and role interpretations. Place appropriation is possible in primary school contexts because teachers often occupy the one learning space for a year and in many cases, years at a time. Temporally, the appropriation of space affords the attachment of the teacher to the space and by extension the other occupants of the space. Appropriation of the learning space by primary teachers is possible because of the way that schools have historically distributed workload on the basis of a ratio of students to teachers and the allocation of classrooms to teacher-student groups for periods of at least a school year. Many teachers work in the same space for a period of years, affording them a sense of place attachment through a history of occupation, despite the moving on of students from one year to the next. The same affordance of this time-space unity, allows for a growing sense of place dependence, through which the teacher has basic needs for social recognition, emotional contact with others, intellectual stimulation, a sense of control over one's circumstances, financial rewards of work, expressions of altruism and a sense of contribution to the lives of children in a positive way.

Place appropriation, attachment and dependence contribute to place identity, which Proshansky, Fabian and Kaminoff (1995, p. 89) define as follows:

a substructure of the self-identity of the person consisting of, broadly conceived, cognitions about the physical world in which the individual lives. These cognitions represent memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behavior and experience which relate to the variety and complexity of physical settings that define the day-to-day existence of every human being.

The emphasis and language used by Proshansky, Fabian and Kaminoff is the individual psychology of subjective experience. Werner, Altman and Oxley (1985, p. 5) assert that, "the ideas of place attachment and place identity suggest that when people attach psychological, social and cultural significance to objects and spaces, they thereby bond themselves and the environment into a unity." Such a unity is a transactional one between people and the environments they inhabit (Altman and Werner, 1985).

I hypothesize that the appropriation of the learning space by primary teachers, along with the accompanying psychological senses of attachment, dependence and identity is a protective factor that ensures their continuity of self, distinctiveness as a professional and person, and contributes to positive self-esteem and self-efficacy. Processes involved in the resolution of the main concern of teachers as previously articulated, all contribute to the personal wellbeing of the teacher and hence are protective factors.

P7 (from interview transcript)

They're talking about the stuff that they've been learning and I think because they're more relaxed, they just engage. It's like they're having a conversation with their cousins on the couch.

I love my room!

6.4 Resolving the main concern

In this section I elaborate on how the substantive categories work together to resolve the main concern of primary teachers in the context of designing, managing and maintaining learning spaces as part of their daily workflow. The main concern as outlined in Chapter 5 is really a hypothesis based on my analysis of data, and the generation of a synthesis statement derived from the statements of main concern generated for individual participants. How people resolve their main concern in a substantive field is the purpose of grounded theory according to Glaser (1998). Glaser (1998) asserts that a grounded theory discovers through the application of grounded theory methods, a core variable that accounts for the resolution of the main concern of people in context and that this variable accounts also for the variance in the ways that the resolution is achieved. The core variable is in addition, transcendent of people time and space. It needs to be noted that the core variable is still a hypothesis. It is theory, not fact or description.

I have taken the position that participants in this study resolve their main concern through the daily transactions that take place in the learning space and that the subjective reflections of participants indicate that four substantive categories can account for the variability of behaviors associated with these transactions. My analysis of the data generated by this study shows that participants:

create multi-faceted / multi-purposed spaces that shape, afford and optimize creative learning and teaching behavior, pro-social interactions, a positive contribution to identity, and having a particular focus on the learner as a self-regulating individual in a social context

This is achieved through four categories of behavior operating as a transactional unity: Orchestrating learning; Being in and maintaining relationships; Being in space and time; Maintaining personal / professional identities and roles. In Chapter 7, I propose that these four substantive categories are theoretically integrated by the basic psychosocial process, placemaking.

Figure 6-18 graphically demonstrates how the resolution of the main concern is theoretically resolved. The theory suggests that the resolution of the main concern is never really completed. It is ongoing and responsive to the real time dynamics of the context. The theory is consistent with a contextual, transactional, systems oriented perspective through the continual mutual influencing of the elements. For instance, a change in the dimensions of complexity influence the perception of the main concern which is being constantly resolved though each of the four substantive fields and placemaking. A change in one of the substantive categories influences each of the other categories and placemaking. These influences feedback in positive (magnifying) or negative (delimiting) ways to the teacher, whose perception of and resolution of the main concern is now changed. This process of resolution is ongoing. Resolving the main concern is something that is renewed continually through occupation of a learning space.

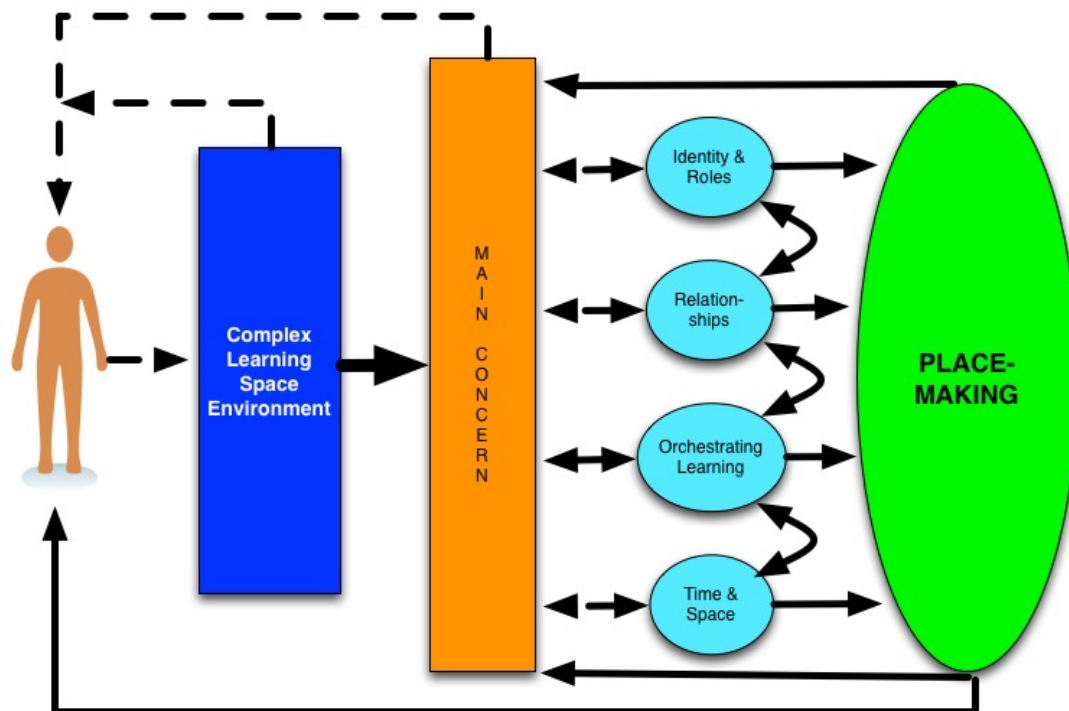


Figure 6-15 A substantive theory of how primary school teachers resolve their concerns as they design, manage and maintain learning spaces as part of their daily workflow

An example of the dynamic described above, is provided by the following scenario: P2 described in photographs and through interviewing, the complexity of the learning spaces she was concerned with, in undertaking her daily duties as an early childhood / primary teacher. The code zoning was used to name the way that P2 used a wide range of spaces for different learning scenarios. Examples include, outdoor spaces, open carpeted space, learning centers, wet area, computer area, focused teaching space, reading spaces, display areas, simulated pet shop area and storage areas. P2 indicated that her philosophizing influenced the configuration of spaces and the ways that she orchestrated learning through pedagogical problem solving, responding to individuals, engaging, maximizing productivity, looking forward, making do and balancing competing demands.

P2 also indicated that relationships were an important aspect of her pedagogical approach and that, students were regularly afforded opportunities to learn from each other. Relationships for P2 were pedagogical and encouraged self-regulation in her students. The qualities of relationships were based on P2's concern for harmony, learning and the social emotional wellbeing and development of her students. This was a reflection of her philosophizing. P2 also expressed a concern that children need to learn the skills for being citizens of the future and that this learning needed to begin early in life and be supported by schooling. She was looking forward on behalf of her students.

P2 expressed a tangible identification with the teaching profession. In her interview, she mentions teaching being "in my blood" (Transcript of interview). Her father was a teacher and when she became one she felt like she had fallen into her niche. She expresses concern over how teachers are viewed by the public and

especially the disrespect that she perceived coming from politicians. She was offended by the cynical use of education as a political scapegoat for all the ills of society. This was reflected in her reference to putting her heart and soul into her work and that she couldn't withdraw her heart and soul despite feeling insulted by politicians who influenced the conditions of her employment.

P2 goes to considerable effort to make the learning space child centered and child friendly. She is aware of how the environment can support children at the developmental levels she teaches. Furniture is the appropriate height, shelving and storage spaces are accessible, learning centers and computers are likewise accessible, spaces is zoned to afford wet and messy activities, group sitting, reading areas, space for play. Movement and access to supervised outdoor learning areas are also considered. The learning space is colorful and bright. Space is configured to maximize variability of activities for learning, frequent moving, focusing and refocusing, coming together and moving apart. The term, choreography comes to mind when reflecting on P2's learning space, or place ballet (Seamon, 1979).

This brief example from one participant demonstrates the ongoing resolution of the main concern as outlined in Chapter 5. The main concern deals with space that affords and optimizes learning and teaching along with pro-social interactions, a positive sense of self and self-regulation. P2's reflections on the learning spaces that she operates in on a daily basis indicate that all the elements of the main concern are being dealt with at some level and in some way in an ongoing sense.

As the main concern was generated through an analysis of the repeating ideas that emerged from the coding and constant comparative process, the elements of the main concern are evident across the participants. They deal with them in different ways and this variation is predictable. That they behave in ways to address the elements of the main concern through the four substantive categories outlined in this chapter is the key point. The example of P2's reflections demonstrates that not only are all the elements of the main concern being addressed, in addition, the four substantive categories are apparent in the ways the dimensions of the concern are addressed.

Orchestrating learning through; philosophizing, pedagogical problem solving, zoning, making do, balancing competing demands, responding to individuals, maximizing productivity, minimizing distractions, engaging, monitoring, negotiating, decision making, using a variety of pedagogical approaches, integrating ICTs into learning, and looking forward; are all evident in the example provided.

Being in and maintaining relationships is likewise apparent through the specific pedagogical relationship patterns of encouraging/discouraging, directing/redirecting, anticipating, rewarding, ignoring, and promoting self-regulation. P2 responds to individuals pedagogically and through caring, respecting, guiding, nurturing and being present to her students in a way that demonstrates her concern for their collective and individual welfare.

The ways that learning is orchestrated and the qualities of relationships in the learning space reflect aspects of P2's identities and role interpretations. She engages in emotional labor, personalizes the space, aligns her behavior with her humanistic philosophy and creates a sense of place for herself and her students.

P2 intentionally creates a learning space that fits the developmental needs of her students in terms of space and time. Affordances for learning are considered by

providing spaces for exploration, open play, creative play with a variety of media, accessible and attractive materials and authentic and engaging simulations of life skills. Time is allowed for play, focused skill learning, instruction, resting, high activity with challenging cognitive load and less active repetitive role playing of learning situations. Time is arranged to reflect the developmental levels of the students. Short periods of cognitively challenging, direct instruction are alternated with semi-structured and unstructured time for more naturalistic child directed learning. In this sense, the space itself become pedagogical.

Across the participants, the variation in the ways that the four substantive categories are reflected in the resolution of the main concern is considerable, and in part predictable, because of the developmental range of children being catered for. Certain high impact variables are also apparent in different sites, the refurbishment of learning spaces at one site being a good example. For P12, crowding created by too high a density of students and associated furniture constrained her pedagogical approach and the quality of relationships that she could develop with her students. Regardless of the variation, all participants resolve the main concern through the four substantive categories outlined in this chapter.

Chapter 7 introduces the theoretical code placemaking, to demonstrate how this code integrates the four substantive categories dealt with in Chapter 6.

Chapter 7: Teachers as place-makers

7.1 Introduction

7.1.1 Purpose of the chapter

In this chapter I propose that a core theoretical category, placemaking, accounts for the operation of the four substantive categories developed in Chapter 6. Placemaking relationally integrates the four substantive categories in context. I contend that when primary teachers engage in the process of resolving their main concern in the context of designing, managing and maintaining learning spaces, they are placemaking. In establishing the core integrative function of placemaking, I review the concept of place through relevant literature. I also review the key constructs in environmental psychology that theoretically account for the subjective experience of place. I outline placemaking as a field before I propose that there is a recursive relationship between the ways that teachers in this study engage in placemaking and the subjective experience of place expressed as sense of place.

Chapter 7 demonstrates that teacher placemaking recursively influences psychological sense of place. I also assert in this chapter that the existing constructs of place attachment, place identity and place dependence are evident in the ways that the study participants resolve their main concern. As these teachers resolve their main concern, they transform learning spaces into learning places. Additionally, I propose that placemaking along with a positive construction of sense of place for teachers, is a protective factor that can support teachers as they orchestrate learning, be in and maintain relationships, maintain personal and professional identities and roles and experience space and time as being supportive. The protective nature of a positive sense of place for teachers is also supported by the literature on the benefits of connectedness and belonging to schools for students and academic outcomes. The final proposition of Chapter 7 is for the inclusion of a placemaking component in the master planning process for new, redeveloped and extended educational facilities. Placemaking is advocated as a heuristic that can be applied across levels of operation in educational facilities.

Chapter 7 includes a substantial reference to theories that attempt to explain the individual experience of place and how humans generate meaning from their interactions with spaces to create a sense of place. The use of the placemaking literature is intended in this chapter to add a dimension of contextualizing for the reader what has been established around this concept given that I am using it in a novel way. The informed reader in this area will know that there is an extensive literature around the concept of place and the psychological experience of place through place attachment, place identity and place dependence. To ignore this would in my view run the risk of being criticized for borrowing ideas from theory in a naïve way and not acknowledging this. This would seriously undermine my claim that the innovative use of placemaking as an integrating category in this study is new and grounded in the experience of participants.

Additionally, the integration of extant theory is not eschewed by grounded theorists (Glaser, 1978, p. 31).

If there is a particularly good theory in the field, one may cover this this earlier and look for emergent fits. The result is usually extending and

transcending the extant theory rather than verifying a deduced hypothesis or replicating an earlier one.

My treatment of the literature in this chapter is intended to demonstrate that extant theoretical literature is treated as data in my analysis. I am not seeking to align my grounded theory with extant theories, but use them as a data source to enrich my theory building. I do not intend to distance my theory from the ground from which it is generated as a set of hypotheses to account for the phenomenon being explored.

Contrasting chapter 6 with chapter 7, it is clear that chapter 6 provides a great deal of evidence for the categories through the use of photographic and textual data taken directly from the raw data. Chapter 7 is a far more theoretical analysis and therefore seems more distant from the actual data. This is, in my view, not unreasonable given that this chapter is all about theory building at an abstract level. Theory transcends people, place and time according to Glaser (2002), but at the same time is not generated outside of the experience of people in the context of space and time. Chapter 7 continues to take account of the ground from which the theory is conceived as it presents a theory to account for how primary teachers resolve their main concern as detailed in chapter 5 and chapter 6.

7.1.2 Brief review of assertions to this point

Learning spaces are places where children go to engage in a broad range of activities that are intended to facilitate their social, emotional, intellectual, physical and spiritual growth in the context of a society. In these spaces they realise affordances of the environment through purposeful and at times opportunistic interactions (Gibson, 1986). Environmental Psychology as a discipline has devoted considerable attention to the ways that the learning space as an environment impacts on the academic outcomes of students. The primary interest has been on the influence of tangible environmental variables on learning outcomes. Studies of the influence of lighting (day and artificial), sound, air quality, ambient temperature, colour of walls, flooring and ceilings, types of furniture and its arrangement, and the age of facilities have all been researched to determine their impacts on academic outcomes as measured by standardised assessments of reading and mathematical performance (Barrett & Zhang, 2009; Barrett et al., 2013). However, there has been relative silence on how teachers, who are the primary managers of learning spaces, actually go about the process of designing, managing and maintaining learning spaces as part of their daily workflow (Woolner, 2010).

Learning spaces are not accidental places in the main. They are bounded spaces, fixed in time, yet also evolving owing to the interactions between the qualities of the space and those who occupy it. Understanding the main concerns of teachers who occupy learning spaces and how they resolve their concerns as part of their daily workflow is a worthy research endeavor if teachers and education facilities planners are to maximize the potentials of spaces to promote and not hinder learning. This study contributes to our understanding of the experience and practice of primary school teachers as agents in learning space design and management.

To this point, I have asserted that this study has illuminated the dimensions of complexity that primary teachers must contend with as part of their daily workflow

in learning spaces. I have also hypothesized the collective main concern of a group of primary teachers who reflected subjectively on learning spaces through taking photographs of those spaces and participating in a photo-elicited interview with the researcher. I have further proposed that primary teachers engage in four categories of process in their ongoing resolution of their main concern. These categories are: Maintaining personal/professional identities and roles, Being in and maintaining relationships, Being in space and time, Orchestrating learning. These categories work as a transactional unity in that they are mutually shaping, dynamic, enduring in time and context bound.

Figure 7.1 demonstrates the relationships between the aspects of a primary teacher entering into a learning space context, experiencing the complexity of that context (see Chapter 5), resolving their main concern as it emerges in all its dimensions in context through four substantive categories (see Chapter 6), and finally placemaking through the ongoing resolution of their concern (Chapter 7). This is a transactional system and all elements provide feedback (positive and negative) to all other dimensions. The process is paradoxical in that it is at once transformative and homeostatic. New information can enter the system at a number of points and motivate a teacher to adjust their behavior, hence allowing for ongoing evolution of the learning space as a learning place. New information may also motivate a teacher to adjust behavior in order to maintain the status quo established in the space.

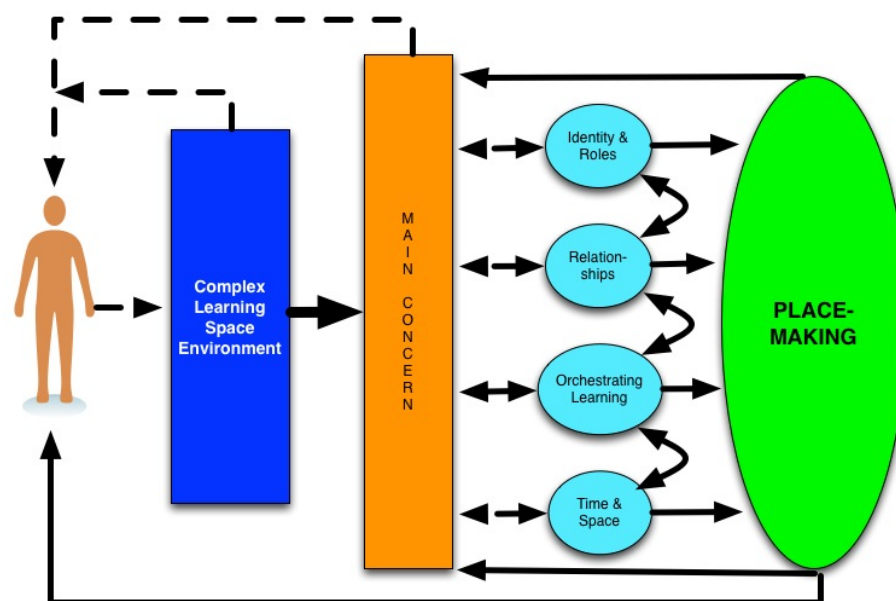


Figure 7-1 A substantive theory of teachers as place-makers

7.2 Placemaking as a theoretical category

Like substantive categories (codes), theoretical categories (codes) are proposed as names for patterns perceived in the data. Glaser (1978) defines theoretical codes by their function. Theoretical categories according to Glaser are codes that account for the relationships between the substantive categories that are supposed to have emerged through the constant comparison process and which are grounded in the

empirical data for the study. I propose that placemaking, as a theoretical category brings the substantive categories of the study into a holistic transactional unity that accounts for how primary teachers resolve their main concern. Placemaking theoretically integrates the substantive categories and offers a new perspective that accounts for much of the variation in how primary teachers act in context.

I have created Figure 7-2 in an attempt to demonstrate the idea that the substantive categories are immersed in the context of placemaking and are in a constant, mutually shaping relationship with one another and with the placemaking context. It is not meant to show relationships such as, “If this happens then this follows.” It is intended to convey the idea that change is unpredictable and constant. Any stimulus event that generates a response in any of the substantive categories has impacts across the system.

An example of this dynamic is when a high impact environmental variable triggers a series of responses across the four substantive categories. For instance, when a child is sick and vomits in a classroom, the resulting environmental changes demand responses that: interfere with orchestrating learning, shift the relational pattern from pedagogical to caring, change the experience of being in space and time to trigger opening of windows and turning on fans to improve ventilation, distributing cleaning and disinfecting materials on the site, moving children away from the site, perhaps moving everyone out of the room until it can be cleaned, and shifting the role of teacher from pedagogue to carer for the sick child and the other children in the class.

The impact of the event on the context of placemaking influences identity, attachment and dependence. For the sick child, depending on the responses of teachers and peers, the experience may reinforce the experience of place as being safe, nurturing, identity supporting and being able to meet one’s needs in a time of distress. Hopefully this would be the case. It may however, erode the experience of place as being safe and capable of meeting one’s needs in times of distress, and therefore impact on the individual’s attachment to the place. A teacher may already be experiencing stress due to a range of environmental factors in and outside of the learning space. They may react to the incident poorly and express intolerance and displeasure to the sick child whose experience of this may reinforce an already entrenched sense of alienation in the learning space.

The participants in this study indicated that the learning spaces they aim to create are supportive of student wellbeing in addition to learning. The idea of a primary school learning space as a safe, supportive place of caring, where students develop towards healthy and active participants in society was evident in participant comments. Creating such places engages teachers in behaviors that support their own and their students’ attachment, identity and dependence in the social context of a behavior setting (See Participants’ main concerns, Chapter 5).

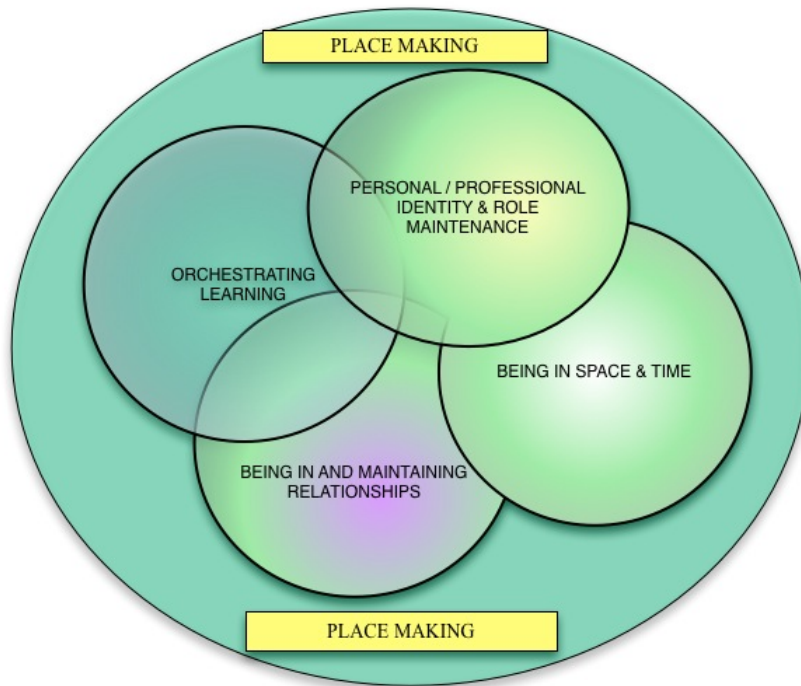


Figure 7-2 Placemaking integrates the substantive categories.

7.2.1 Place as a concept

In order to proceed with an argument that placemaking as a process is basic to human experience and applies in the context of primary teachers designing, managing and maintaining learning spaces, I need to address the concept of place itself. Life on earth is immersed in space and time. As organisms, humans occupy space and time and the subjective experience of space is determined in part by the spatial-physical qualities of the environment in which one is immersed. The concept of place in environmental psychology and the many other disciplines that have investigated it is considered to be multi-dimensional and includes more than the spatial-physical qualities of the environmental surrounds. A place has specific physical qualities and is bounded in some way from other places. The qualities of a place in this respect can be mapped and represented in different ways. Natural and built environments are routinely represented through mapping of their various qualities. However, the idea of place as simply the spatial-physical surrounds in which we operate as humans is very limiting and lacks real power in explaining the person-in-environment relationships that help us to understand the subjective experience of place.

The idea of a place that exists outside of an observer is somewhat difficult to grasp. Ontologically I accept that the environment exists regardless of my participation in or perception of it. Epistemologically, if one is to know place, then one must experience it or accept that others can experience it and make representations of it. Objective descriptions of place are problematic from a constructivist epistemology. One cannot be an observer of an environment without being in the environment being observed. Hence there is always the issue of the person-in-environment transactions that are inherent and unavoidable. Place then

involves making meaning by those in it and this making of meaning is what evolves the concept of space into the concept of place.

Place as a concept has been explored across disciplines. A rich diversity of literature exists along with a diversity of definitions of place, and how place is experienced by humans. Modern philosophers have engaged with the idea of place in an attempt to formulate ontological and epistemological axioms for understanding how space and time are transformed by human experience into place (Certeau, 1984; Heidegger, 1978; Lefebvre, 1991; Malpas, 1999).

Human geographers have explored place largely from a phenomenological perspective to theorize the essential nature of human experience of place (Gustafson, 2001; Relph, 1976; Seamon & Mugerauer, 2000; Seamon, 1979; Tuan, 1977; Tuan, 1980). Tuan (1977, p. 61) emphasizes the lived experience of place as follows:

Trees or boulders may be dense in a wilderness area, but nature lovers do not see it as cluttered. Stars may speckle the night sky; such a sky is not viewed as oppressive. To city sophisticates nature, whatever its character, signifies openness and freedom.

Place exists and is experienced through the construction of meaning, not merely the processing of sensory stimuli with a set of conditioned responses. Human geographers such as Relph (1976), Tuan (1977) and Seamon (1979) impose a phenomenological perspective of lived experience on place. Relph (1976) supports the human construction of place as being created through the ways that people experience it as degrees of 'existential insideness' or 'existential outsideness'. Relph (1976) also describes the notion of 'placelessness' as opposing the experience of place. Placelessness is alienating and resists an experience of place as inviting. Modern industrialised landscapes are common representations of placelessness. In Relph's (1976) exposition, it is the placelessness of the landscape or built environment that is explored rather than the subjective experience of placelessness for individuals and groups. Placelessness is associated with inauthentic attitudes to the construction of the built environment that results in "a flatscape, a meaningless pattern of buildings" (Relph, 1976, p. 117). The concept of placelessness would appear to be close to what the architect, Christopher Alexander (1979) refers to as dead space that contrasts with live space. Tuan (1977) contrasts the human experience of rootedness with sense of place. Rootedness is considered to be a state of unawareness, while sense of place implies a state of consciousness that reflects knowing about one's experience of place and the qualities of place itself.

Environmental psychology has embraced the construct 'place' to indicate the individual, community and socio-cultural meanings attributed to specific localities. The social psychologists Cuba and Hummon (1993, p. 112) cite (Proshansky, 1983 and Weigert, 1981) in referring to places:

as bounded locales imbued with personal, social and cultural meanings (that) provide a significant framework in which identity is constructed, maintained and transformed. Like people, things and activities, places are an integral part of the social world of everyday life; as such, they become important mechanisms through which identity is defined and situated.

Bonnes and Secchiaroli (1995) assert that the place construct in environmental psychology evolved out of a dissatisfaction with some aspects of the behavior setting theory expounded by Barker (1968). They cite Canter (1986) and Russell and Ward (1982) in defining place as "a unit of environmental experience or as a psychological

or perceived unit of the geographical environment” (p. 169). Canter wrote, *The psychology of place* in 1977 and therein set out an agenda for the investigation of the place construct through the application of psychological methods. A clear distinction was made at that time to shift the research from experimental psychology that investigated perception and its related fields to the empirical fields, “those situations in which people live and work, converse with others, are alone, rest, learn, are active or still. It is about those units of experience within which activities and physical form are amalgamated: places” (Canter, 1977, as cited in Bonnes & Secchiarioli, 1995, p. 170).

Geographical sites exist regardless of human occupation. Such spaces become places when humans occupy them and engage in a diversity of activities in a space, time and social context. This tri-polar perspective of places is well supported in the literature (Gustafson, 2001; Smaldone, Harris, & Sanyal, 2005). It proposes that meaning is constructed through one’s experience of place in the context of the transactions among the physical qualities of a space, the qualities of the sociocultural dimensions of the context and the psychological dimension of the self. How these dimensions are clarified, structured, interrogated and interpreted is dependent on the world-views and the epistemological, ontological and axiological fidelities of researchers along with associated research methodologies (Patterson & Williams, 2005). The diversity that exists in the place research field led Lewicka (2011, p. 208) to conclude that:

At present the literature on people-place relationships is rich with empirical results, conceptual distinctions, and author’s own ways of organising the material. Finding one’s way through this thicket and offering a perspective which will throw new light on place research presents a real challenge.

Lewicka’s (2011) perspective reflects the observations of other authors who have sought to discover some coherence to place research (Gustafson, 2001; Hernandez, Hidalgo, & Ruiz, 2014; Jorgensen & Stedman, 2006; Patterson & Williams, 2005; Pretty, Chipuer, & Bramston, 2003; Scannell & Gifford, 2010).

Consensus on the specifics of the place construct across disciplines is lacking, but the general idea that place cannot be simply defined as a physical location is accepted. Ideological, epistemological and ontological perspectives influence how researchers position place and how they respond to it methodologically. This has contributed to the diversity of definitions of place as a phenomenon (Patterson & Williams, 2005). My reading of this diversity of approach leads me to the conclusion that, in order to investigate place, one must consider the human experience of it, how meaning is made through the person-in-environment transactions and how these transactions impact on the place occupants. Place is experienced through the senses and through perception. It is also experienced through meaning that is generated through learning, language, and the interactions of the individual embedded in a socio-cultural context (Manzo, 2005).

Place is closely associated with what people do in it. A learning space is a site of activity that promotes learning. It is also, at the same time, a site of social interaction that influences identity formation and maintenance. Place is complex, multidimensional, shaping of, and able to be shaped by occupants. It is experienced through personal and socio-cultural meaning making processes including cognitions (especially discursive processes), emotions and behaviors in context.

7.3 Human experience of place

The human experience of place has been a pervasive theme in environmental psychology, yet theories of how people construct a sense of place psychologically remains a highly contested field. Despite considerable interest in this field, there is currently an ongoing lack of consensus about the relationships between constructs used to account for psychological sense of place (Hernandez et al., 2014; Lewicka, 2011a; Smaldone et al., 2005).

A number of conceptual models to account for human subjective experience of place have emerged over the past two decades in an attempt to gain some cohesion to the many concepts generated to explain the human sense of place (Jorgensen & Stedman, 2001; Lewicka, 2008; Manzo & Devine-Wright, 2014; Scannell & Gifford, 2010a). The ongoing search for conceptual cohesion in this field makes mapping the territory a challenging task.

As can be expected, environmental psychologists have focused largely on the way that individuals construct their subjective experience of place cognitively, affectively and behaviorally (Altman & Low, 1992). Place attachment, place identity and place dependence are three constructs often used to account for how people develop a 'sense of place' over time (Jorgensen & Stedman, 2006). Place attachment has been generally used to refer to the bonds that people develop to places and is hypothesized to involve cognitive, affective and behavioral dimensions (Manzo & Devine-Wright, 2014). Place attachment is a dominant topic in environmental psychology's interest in how people experience place (Manzo & Devine-Wright, 2014). Like the concept of place, place attachment has been constructed in a variety of ways depending on researcher perspectives on its definition, structure and measurement (Manzo & Devine-Wright, 2014). It has also been conceptualized in at least three different ways: as a one-dimensional concept as a multidimensional concept and as a dimension of a superordinate concept. Each of these conceptualizations has a variety of representations in the literature (Hernandez, et al., 2014).

Given the ongoing search for a consensus on the definition of place attachment it seems risky to embrace any particular one without engaging in an interrogation of the field that is beyond the scope of this thesis. Given the context of this study though I propose that there is evidence to accept a definition that sees place attachment as a construct to account for the affective ties that people develop over time to specific places in their lives. Further, from this perspective, place attachment is associated with two other constructs - place identity and place dependence - with all three working together holistically to generate a sense of place for individuals and groups. Sense of place is considered a superordinate concept to place attachment, place identity and place dependence (Jorgensen & Stedman, 2006).

Jorgensen and Stedman (2006) argued that a better understanding of how sense of place is organized psychologically would help "to bring a measure of clarity to a relatively chaotic literature" (p. 316). These authors also considered pragmatic implications of this clarity, with improved environmental management predicted. This position is consistent with the pragmatic orientation of environmental psychology mentioned in Chapter 2. The position I take in this current chapter is that the human subjective experience of place is recursively related to acts of placemaking in the context of primary school learning spaces. The thrust of the thesis

is to understand primary teacher concerns and how they resolve these so that pragmatic implications are drawn and recommendations offered.

7.3.1 Place attachment

Despite the conceptual fog that researchers have lamented from time to time, place attachment has been largely accepted to refer to the types of person-place affective bonds that develop over time (Altman & Low, 1992). Place attachment is a multidimensional construct with ongoing debate occurring about how it is structured psychologically (Manzo & Devine-Wright, 2014). For the purposes of this study I treat place attachment as a construct that refers to the quality of personal bonds to meaningful locations. These bonds are formed when people interact with place and form cognitions and affect related to specific meaningful qualities of place.

I apply a contextual, transactional, holistic and systems oriented perspective to emphasize the interactions among the physical, social and psychological domains that contribute to the formation of person-place bonds. Using this perspective I propose a model that treats place attachment as one of three mutually shaping contextualized constructs that contribute to the subjective experience of place. The other two, place identity and place dependence, are drawn from the model of sense of place proposed by Jorgensen and Stedman (2006). I note though that Jorgensen and Stedman (2006), using psychometric methods assert that “identity-based beliefs about a place, positive emotions associated with a place, and behavioural commitments toward a place, were not completely interchangeable variables” (p. 317). My treatment here does not challenge this independence of the place dimensions, attachment, identity and dependence. I am applying a perspective that demonstrates how they might operate in together in context to contribute to a sense of place.

My perspective on place attachment also allows for maximum variation in the experience of place. Place attachment is not seen here as positive affect. It has a shadow side as demonstrated by Manzo (2005, 2014). People may perceive place as shaping their identity or as meeting their immediate needs, but not as a source of positive attachment.

7.3.2 Place identity

Proshansky, Fabian and Kaminoff (1983, p. 59.) defined place identity as “a substructure of the self-identity of the person consisting of broadly conceived, cognition about the physical world in which the individual lives.” More recently, the construct has been seen as having a social dimension and involving identification with the social dimensions of place (Pretty et al., 2003; Twigger-Ross & Uzzell, 1996). As proposed in Chapter 6, a contextual, transactional, holistic, systems oriented approach would consider the concept place identity as dynamic and evolving rather than static (Wapner & Demick, 2000). Dimensions of a psychological, physical and social nature for both individuals and environments influence place identity along with roles undertaken by individuals in the context of place. From this perspective, place identities rather than place identity would allow for a more dynamic and fluid view of the construct. This dynamic perspective of identity is consistent with that proposed by Proshansky, Fabian and Kaminoff (1995). In the context of this study, I propose that primary teachers maintain their

identities and roles though the resolution of their main concern as outlined in Chapter 5 and Chapter 6 and that place identity as a construct is supported by the reflections of the participants.

7.3.3 Place dependence

While place attachment refers to person-place bonds and place identity the influence of place on the experience of self in context - place dependence - refers to the perception of the capacity or function of place in meeting one's needs and supporting the achievement of goals in context (Jorgensen & Stedman, 2006; Pretty et al., 2003). Place dependence as a construct developed by Stokols and Shumaker (1981) is essentially concerned with the functional aspects of place and the activities that people conduct in context (Bonnes & Secchiaroli, 1995). Droseltis and Vignoles (2010) consider place dependence as "referring to the functional link between people and places in moving towards goal achievement" (p. 31).

Primary school teachers and their students spend around a thousand hours a year together in a learning space, usually a classroom. The functions of teachers as social agents in the context of education are widely ranging. Learning spaces are sites that promote socialization, academic learning, welfare, healthy behavior and wellbeing. The goals of students and teachers may at times clash in the learning space as motivations for achieving individual and group goals can be antagonistic. Regardless of this, all behavior is functional and goal oriented. The extent to which a place supports the satisfaction of goals is relative to its social and physical affordances and person-in-place transactions.

The participants in this study emphasized the core function of the learning space as being a site in which learning occurs. The behavior setting program of schools demands this and teachers are required as servants of this setting to focus their energies on delivering a socially constructed and sanctioned curriculum in such a way, on site, that students can achieve benchmarks in academic knowledge, understanding and skills. From the teachers' perspectives, the learning space needs to support them in their endeavors to achieve learning outcomes for their students. P3 serves as an example. P3 observed that her students who came from rural backgrounds were more comfortable and participated more fully when they were outdoors. P3 was concerned to help them develop attention skills as they would need these to transition to secondary school successfully. P3 utilized a broad range of learning spaces, in and out of doors to help develop the skills her students needed to focus and maintain attention for longer periods of time. P3 also considered her use of learning space as an important way to promote self-regulation in her students.

At times, the learning space can act as a barrier to a teacher achieving their goals. At one site where the five participants in the study had recently transitioned from teacher centered to teacher decentered, refurbished learning spaces, the new spaces provided specific pedagogical and relational challenges to the teachers. The goals of the teachers in terms of facilitating learning outcomes for students did not change, but the behaviors required of the teachers to achieve their goals changed as a result of the physical environment. A transition period in which the teachers grappled with the new spaces occurred. In this time, frustrations led to pedagogical problem-solving and the adoption of new behavioral repertoires for achieving goals. The teachers concerned indicated professional growth as a result and after one year had all adjusted to the new spaces and evaluated them positively. Not only were the

learning outcomes of students considered improved, but also student learning related behavior improved with fewer incidents of conflict and disruption. Students were reported to be more relaxed, engaged and self-regulating. Although such impact was not specifically measured, the evaluative comments made by this group of teachers about the impact of the physical environment on goal achievement, indicates in my view, a degree of place dependence for these teachers.

Jorgensen and Stedman (2006) demonstrated the psychometric independence of place attachment, place identity and place dependence. This indicates that all three constructs are neither superordinate nor subordinate to one another, but when measured, they are providing measures of different aspects of sense of place. From this perspective, one could experience low levels of attachment to a place despite high levels of place identity and dependence. Likewise, a low level of place dependence does not mean place attachment will automatically follow. Manzo (2014) makes reference to the shadow side of place attachment through an analysis of place attachment, poverty and social housing. The socio-political perspective applied to place attachment supports the independence of constructs while at the same time questioning their capacity to account to a sufficient degree for a nuanced, complex experience of place.

I propose that a transactional perspective helps us to see how the constructs developed by environmental psychology work in context. Each dimension of the subjective experience of place is transactionally tied to the other dimensions. Changes in one dimension are likely to impact on the other dimensions. Changes in environments may impact holistically on all three dimensions at once. Additionally, teacher behaviors as placemakers, can be directed towards influencing any one dimension which can then induce change in the others.

7.3.4 Person, Place, Process Model

Recently developed models to account for the experience of a sense of place have built on the intra-psychological constructs of place attachment, place identity and place dependence to include the qualities of the external environment, the developmental and personal history of individuals and the processes involved in affect, cognition and behavior related to place (Scannell & Gifford, 2010b). The person, place, process model seeks to organise “the main definitions in the literature” (Scannell & Gifford, 2010b), and provide a conceptual framework for exploring each of the dimensions and how they contribute to the overall experience of place. Hernandez et al (2014) suggest that excessive attention has been afforded the ‘process’ dimension of the person, place, process model in the literature, and that more research into the other two dimensions is warranted. The suggestion is for a model of place attachment that accounts for the transactions among many variables across three domains: person (individual and cultural); process (affect, cognition and behavior); and place (social and physical) (Scannell & Gifford, 2010a).

Over emphasis on the person domain - in particular the intra-psychological processes of the experience of place - fails to account for the contextual, transactional, holistic and systems oriented nature of lived experience. It helps us to understand the psychological structure of subjective experience, but falls short of accounting for how humans make meaning of and interact with their environments. In order to understand better what influences human behavior in place, a transactional model that includes personal meaning making, place experience, and

social and spatial variables in context, is necessary. The learning space environment is a particular context with social, cultural, design, behavior setting program and site specific variables at play. Participants in this study demonstrated that the complexity of the environment (see Chapter 5) occurred as a dynamic flow of recursive patterns that required real time responses from them. Rather than searching for a formal theory to account for this experience of place, a substantive theory grounded in the context of teachers' experiences of learning spaces may prove to be a useful heuristic to aid in transforming learning spaces into learning places.

7.3.5 Researching the human experience of place

Questions have been raised about the capacity of both factor analytical models, and qualitative methods to account for the human experiences of place (Williams, 2014). The main criticism of quantitative approaches to place experience and meaning relates to the way that these methods focus on the "individualized, mentalistic nature of place meanings...rather than as socially or discursively produced representations" (Williams, 2014, p. 108). This fracturing of individual experience into a range of mental constructs seems counter to the lived experience of place as a holistic, transactional, socially and culturally constructed one. "From an interpretive or qualitative perspective, meaning is not so much a property of the person or the object, but a transaction between the two mediated through culture, social interaction, and individual past experience" (Williams, 2014, p. 108). Additionally, more factors are identified as research proceeds and it is difficult to identify how or if these factors (eg., bonding; place-self congruity; place relativity; environmental fit) relate to existing factors. Likewise there is the ongoing problem of the position of factors in relation to each other: superordinate, subordinate, dependent or independent (Hernandez et al, 2014).

The proliferation of different scales for measuring supposedly similar or the same constructs has led to a concern by some researchers over the validity of these measures. The scales are measuring something but confusion exists as to what it is, given the proliferation of meanings ascribed to constructs (Hernandez et al., 2014; Raymond, Brown, & Weber, 2010).

Qualitative research methods in general, have been critiqued for a supposed lack of rigor, problems with researcher bias, the influence of researchers on participants, lack of predictive power and a lack of generalizable results (Willig, 2008). The criticisms of qualitative methods in place research are often presented as a contrast to the best that the hypothetico-deductive scientific paradigm, with its application of psychometric methods offers. Research about place-people relationships, place meaning and sense of place is however, rich in methodological diversity. Patterson and Williams (2006) and Manzo (2006) argue for a pluralistic approach to place research with an emphasis on synthesizing from different research traditions to achieve a more holistic perspective. Such an approach involves "a synthetic act that must sift, weigh, and incorporate the findings from divergent approaches to science and other forms of knowledge" (Patterson & Williams, 2006, p. 377).

In Chapter 2 I outlined my general methodological attitude towards this research project as being holistic, transactional, contextual and systems oriented. I arrived at this perspective through an analysis of the philosophical, grounded theory methodology, environmental psychology and researcher reflexivity foundations of

the study. It is not surprising then that I find myself in agreement with Williams (2014, p. 109) who proposes that as place itself “is a transactional, contextual, holistic phenomenon” and that people-place relationships are equally complex, a pluralist approach to place experience research is preferred.

In the context of this study on primary school teachers’ experiences of learning spaces, the empirical data generated and analyzed using grounded theory methods, indicates that the participants’ perspectives are themselves holistic, contextual, transactional and contextual in nature. The complexity they face as part of their routine work is managed through the interaction of four substantive categories of action and experience, working together in mutually shaping and recursive ways as was outlined in Chapter 6. I hypothesize that placemaking as a theoretical category, integrates the substantive categories of Chapter 6, giving rise to a transactional unity, learning place, which is experienced subjectively by teachers through the constructs place attachment, place identity and place dependence. These intra-psychological constructs give rise to a sense of place for teachers. Sense of place shapes and is shaped by the transactions that occur in the context of a physical, social, cultural and chronological environment. This environment is dynamic and constantly monitored and responded to in both proactive and reactive ways.

One advantage of this perspective is that it affords a natural heuristic through which the design, management and maintenance of learning places as part of routine primary teacher activity, can be interrogated. By asking key questions about place and the experience of it for teachers and their students, the researcher can make this experience conscious and subject to scrutiny. Decisions can then be made to act in particular ways to support positive place attachment, place identity and place dependence.

7.4 Placemaking

In this section, I offer a perspective on placemaking as the intentional intervention in environments to facilitate a subjective experience that promotes attachment, identity and dependence. Much of the research on place attachment has concerned itself with the positive emotions, cognitions and behaviors of a positive nature. Positive attachments to home and recreation sites have featured in the literature (Hartig, Evans, Jamner, Davis, & Gärling, 2003; Korpela, Kytta, & Hartig, 2002; Jorgensen & Stedman, 2001; Lewicka, 2005, 2010, 2011). Manzo (2005) reminds us that the experience of places such as home are not always positive despite being experienced as meaningful in terms of identity and dependence. Manzo (2003) also reminds us of the benefits of using the knowledge and understanding we have gained through research in place meaning and place attachment in the field of community planning. This grounded ecological approach can be applied to micro-environments as well as to community level development.

Micro-environments like learning spaces are places of action and experience. Because of time spent in these places and the value attached to the experience there for individuals and for society, interventions to make the experience of being in them more satisfying, is an important field for investigation. A basic assumption of this approach is that direct intervention in environments can have an impact on the sense of place of occupants in a positive or a negative way. Participants in this study indicate that given the resources and agency, they would prefer to create places for learning and schooling more generally, that are experienced positively by themselves

and their students. They saw themselves as having the responsibility to design, manage and maintain the learning space to achieve the intended learning, social, physical and emotional needs of students. Their main concern in this endeavor reflected this. Additionally, my analysis of their reflections provides evidence that they resolve their main concern through actions across the four substantive categories presented in Chapter 6. As these teachers go about resolving their main concern, I propose that they are engaging in placemaking. These placemaking activities influence their sense of place through the mutually shaping experience of place attachment, place identity and place dependence. This placemaking influence extends to students as well. I also propose that primary teacher placemaking activities are a protective factor for teachers and for their students.

7.4.1 Placemaking in environmental planning

As a theoretical construct placemaking accounts for an enormous variation in human experience of place from alienation to strong attachment. At the same time, it is an intentional series of actions that contribute to the experience of place for self and others. In the tradition of urban planning and architecture, placemaking is concerned with the design of spaces so that they contribute to the occupants' access to, and participation in activities afforded by the space, commensurate with the behavior setting. A park can afford spaces for resting, playing, meditating, appreciating nature, being aesthetically entertained, eating, cooking, exercising and enjoying the company of others. Some parks are well lit and can be used both day and night. Others are intended only for daytime use. Some parks have more facilities than others and afford more opportunities for a variety of activities: water features, gardens, playgrounds, open grassed spaces for playing games, toilet facilities, gas or electric cooking facilities, tables and seating, bird and other wildlife habitats, concrete areas and paths for bike riding, skateboarding areas or BMX bike areas, art installations such as sculptures and parking facilities or public transport stations. Some parks are designed with the access of people with disabilities in mind. In Toowoomba, Queensland, there is a park designed to provide people with visual impairment a sensory experience through the planting of herbs. In many parks though, access for people with physical impairments is made difficult if not impossible owing to a lack of design for wheelchair access.

The design of parklands can be integrated into the landscape of a location so that it takes advantage of natural features that people can enjoy. For instance, in Brisbane, Queensland, there is a botanical garden that runs along the bank of the Brisbane River. Boardwalks into mangrove reaches of the river are included in the design of the park. Nearby, the Brisbane, Southbank Parklands take advantage of the Brisbane River to provide spaces for walking, cycling and sitting. River based public transport stations are integrated into the riverside spaces of the parklands. These features attract many tourists and local residents alike and are the venues for public events such as the Brisbane Festival, and the River Fire events that are held annually.

The regional city of Toowoomba holds an annual spring, Carnival of Flowers that contributes to the promotion of the Garden City image and promotes the city as an enjoyable place to visit and reside. Parks and gardens are key components of building a sense of place in Toowoomba. The city's Queen's Park, is a central venue for a range of public events each year including: Easter Fest; Shakespeare in the Park; Carnival of Flowers; circus visits; garden markets. All of these events

contribute to the cultural identity of the place called Toowoomba. The city's architecture, links to the farming and grazing history of the Darling Downs, private school facilities, university, role as gateway to Western Queensland and location atop the Great Dividing Range all contribute to a sense of place for those who reside there, or visit.

Many cities around the world have undergone transformation in terms of place significance as a result of the waxing and waning of industries. Cities that had been built on manufacturing industries that have become redundant and closed down have had to undergo a process of re-placing to provide an economic future based on alternative industries such as tourism. Placemaking on such a scale is a task involving many stakeholders and can take many years to achieve.

Placemaking as a process in urban planning has a lot to do with providing a broad range of activities that cater for a broad range of developmental needs and interests (Placemaking Leadership Council, 2014). By creating environments with appeal, people are encouraged to occupy and engage with the spaces and enjoy the multiple opportunities to realize the affordances these spaces offer. Realising affordances helps to motivate people to want to experience the environment again and motivates them to return to the space for further engagement.

In order to achieve this, placemakers facilitate the development of a sense of place for visitors and occupants through place attachment, place identity and place dependence. Hopefully, visitors to and occupants of the place will find it attractive, somehow reflective of their sense of self and able to fulfill their needs. Experiences had in the context of place allow the individual to carry memories and imaginings with them, that will motivate them to return over and over again, thereby deepening their connection to the place. They also construct narratives of place experience that they share with others. Through this process, people appropriate spaces at different levels. They may seek out a particular spot in a park, or on a beach, or at a table in a café when they visit. They may establish relationships with particular vendors, or shopkeepers or others who provide some services in the space. They may begin to identify with others who likewise are appropriating the space. A sense of being attached to the place begins to emerge and is reinforced through ongoing transactions in context over time.

There are parallels between how primary teachers design, manage and maintain learning spaces and how placemakers working in broader environments engage in placemaking. Teachers engage in placemaking through their daily activities. They construct and reinforce their own sense of place through the four substantive categories identified in this study. As placemakers they are also influencing the sense of place experienced by their students and others who occupy the learning space for various periods of time.

7.4.2 Placemaking in the learning space: From learning space to learning place

Psychological sense of place is a hypothetical construct developed to account for the psychology of the subjective experience of space by individuals. Place meaning refers to the many variables involved in the construction of meaning around place. It is more than the subjective experience of place. Placemaking is a practice concerned with the intentional shaping of space and time to engender a sense of

place in a particular way. Primary school teachers are placemakers as they design, manage and maintain learning spaces as part of their daily workflow. The degree of awareness that all teachers have of the placemaking acts they engage in is highly variable and depends on a broad range of factors. These include the exposure to professional development opportunities, the implementation of site refurbishment initiatives by school principals, participation in research projects, professional reading, and many other serendipitous events. Discursively, teachers may construct the concepts of sense of place and placemaking very differently from a researcher in environmental psychology or another discipline. They may however be reflecting on similar or the same ideas, just using a different language.

Teachers who configure their classrooms to be teacher centered, with desks arranged in rows facing the one direction are constructing the space to align with their perspectives on how best to:

- orchestrate learning
- be in and maintain relationships
- enact an interpretation of roles consistent with identity as a teacher and
- establish a setting that is comfortable for them to operate in and facilitate the explicitly and implied intended purposes of the behavior setting.

They construct a sense of place for themselves through these actions and they influence the sense of place of students at the same time. Likewise, a teacher who intentionally arranges furniture to facilitate student interactions and collaboration, decenters the teacher as instructor and also influences sense of place through the pedagogical, relational, experiential and identity implications of the arrangement.

Teachers influence the experience of place for themselves and their students through their actions in context. Some of these actions are emergent and temporary, but patterned. Some are more a tangible feature of the space. The example of configuration of furniture is more the latter while the relational patterns between teachers and students are less tangible and more transitory and emergent. Even so, these relational patterns are a predicable feature of the place over time as they become entrenched, and reflect the teacher's interpretation of roles, identities, teaching approach and sense of place. The way a teacher engages in; pedagogical problem solving, monitoring, maximizing productivity, zoning, balancing competing demands, responding to individuals, nurturing, guiding, directing, redirecting, personalizing space, making do, and the other properties of the four substantive categories generated in this study; is placemaking. These aspects of teacher behavior create the envelope in which a sense of place evolves over time, both for the teacher and the student.

Primary school learning spaces can engender a sense of safety, belonging, self-efficacy, self-determination, self-regulation, acceptance, inclusion and comfort. They can also be threatening, excluding, alienating, self defeating and stressful. Many students experience their schools in this way. Teachers too can experience their workplaces in this way. The workplace can be stressful, identity eroding, relationally toxic and physically debilitating. It can be a site of distress and alienation.

As noted in section 7.3, sense of place is hypothesized to be comprised of place attachment, place identity and place dependence. Placemaking refers to the ways we intentionally (though often out of awareness) intervene in a space to make it more

likely to support the qualities, and sense of place that we deem desirable. Learning spaces are constructed in a hard way as fixed spaces in time. They have architecture. Teachers rarely have the opportunity to knock down walls, install more windows and doors, lay alternative floorings or raise ceiling heights. They do however, impact considerably on the learning space through the substantive categories identified in this study. Additionally, they resolve their main concern through their placemaking activities. These placemaking activities influence their own and their students' sense of place in a recursive fashion.

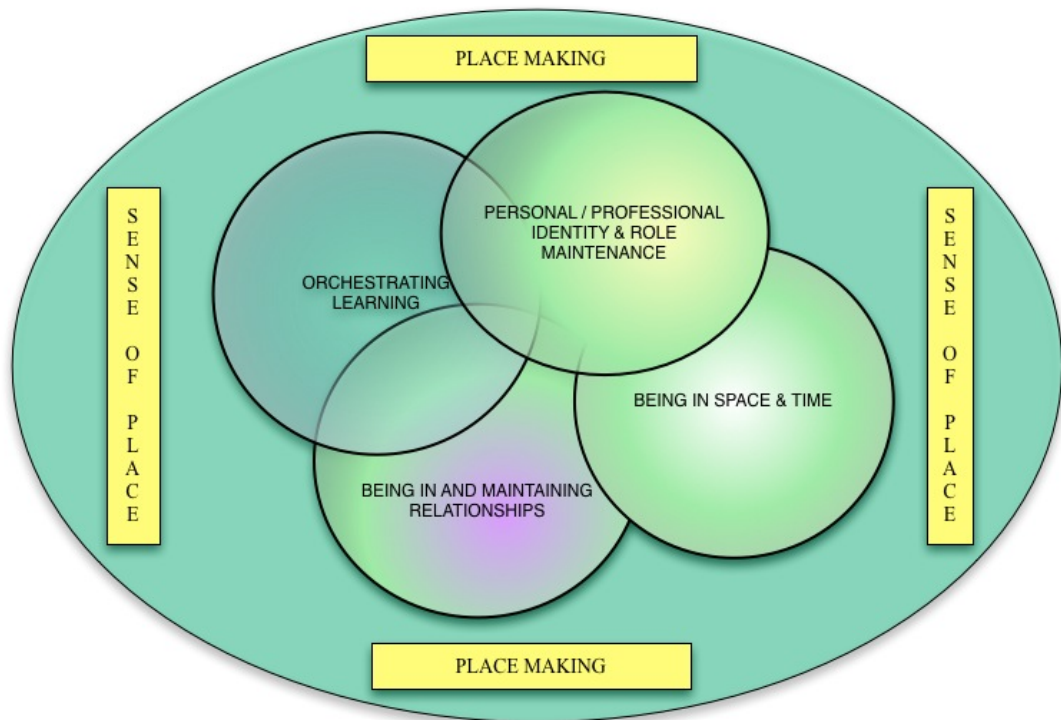


Figure 7-3 Placemaking and Sense of place in the learning space context – recursion

As noted above, sense of place is hypothesized to be a psychological phenomenon made up of three interacting and mutually shaping constructs: Place attachment, Place identity and Place dependence. These constructs invite the following questions: What is the quality of the person-place bonds that develop as artifacts of cognition and affect associated with the place? How does the place support the identities of those occupying it? How does the place meet the needs of those who occupy it?

In the learning space these questions are helpful for teachers who are striving to create complex multi-faceted / multi-purposed spaces that shape, afford and optimize creative learning and teaching behavior, pro-social interactions, a positive contribution to identity, and having a particular focus on the learner as a self-regulating individual in a social context. The placemaking perspective, affords teachers a way of conceptualizing the learning space as an environment that promotes person-place bonds, supports identity development and meets personal and group needs.

Placemaking is the process through which primary teachers imagine space in terms of how that space facilitates the achievement of the program of the behaviour

setting. It includes enacting these imaginings and adjusting behavior and spatial features according to the quality of feedback received through the person-in-environment transactions they participate in. Placemaking is an ongoing, dynamic process involving cognitive, affective and behavioral dimensions for individuals, but it is also a social, discursive and contextualized ecological process. For primary school teachers it is a process through which they achieve a sense of connectedness to their workplace, and create the conditions for a sense of connectedness for their students, to their primary place of formal education. It is also the process through which teachers establish affordance rich contexts that when realised, contribute to the powerful learning process of matching affordances (potentials for matching intention with the physical and social qualities of the environment), with effectivity (skill) sets. This constitutes a learning cycle in which the effectivity sets that are mastered, in order to realise affordances, assist the learner to generate enhanced and more complex and novel skills, that allow the realisation of more affordances in the context (Barab & Roth, 2006).

Learning spaces from a placemaking perspective facilitate positive person-place bonds through physical, psychological and social channels. As sites for orchestrating learning the physical and relational dimensions of learning spaces are closely aligned. The way that a teacher orchestrates learning tangibly affects the experience of place for students. A space that is configured to promote interaction and learning from one another in an active, engaged, student centered and inclusive way affords a particular experience. Likewise, a space configured to support a teacher centered, behavior management and transmission model of teaching affords a different experience. The experience of a space that is well maintained, clean, orderly, predictable, stimulating, well lit, well ventilated, provides access to vistas and which promotes a sense of ownership, freedom to move and acceptance, is likely to encourage positive person-place bonds. A run down, poorly lit, inadequately ventilated, dull, closed in, crowded and restricting space in which relationships are stressful is likely to discourage positive person-place bonds (Bernard, 2012; Uptis, 2009).

The physical, relational, and activity qualities of a space, impact on sense of self in context. Place identification is fluid and ranges across a spectrum of subjective experience. A learning space can promote a sense of identification and sense of belonging to it. Such a learning space becomes a place in which one's experience of self is positive, reinforcing, and meets a range of physical, psychological and social needs. A space can also be alienating and reinforce a sense of discontinuity of self, and a sense that one is different and does not belong. A space can clash with how one sees oneself as an individual and as a member of a social group. This is most evident in the field of disabilities. Spaces inherently communicate powerful messages of inclusion or exclusion for students with disabling conditions through the degree to which they address barriers to access and participation.

Teachers and students have many of the same, and some different needs. When a space meets one's needs in context it promotes attachment. Learning places in which teachers and students feel safe, accepted, included, physically comfortable and relaxed, efficacious in roles, and supported to achieve high levels of performance through challenging yet realistic expectations meet a broad range of needs and promote attachment.

Through the psychological dimensions of place attachment, place identity and place dependence, a sense of place develops. Additionally teachers and students construct placemaking narratives to give meaning to their subjective experiences. Such narratives reflect the quality of bonds between individuals and the learning space. They reflect the experience of identification with the place as a physical-psycho-social transactional unity. And they reflect the ways that learning spaces meet the individual and collective needs of the occupants. Hence, a learning space becomes a learning place.

Figure 7-4 demonstrates the recursive relationship of the placemaking/sense of place dynamic. Placemaking in context, through the transactions of the four substantive categories of this study, influence in variable ways the mutually shaping subjective experiences of place attachment, dependence and identity to impact on an occupant's sense of place.

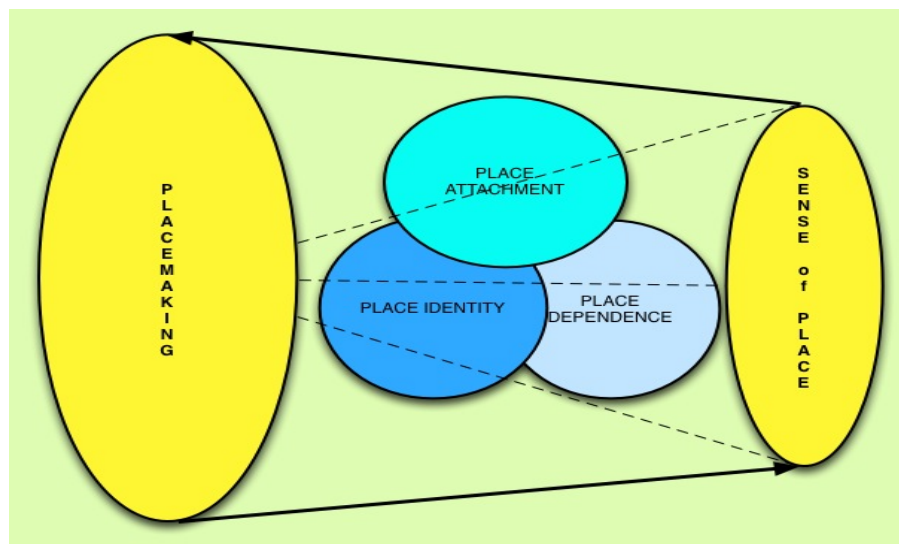


Figure 7-4 Placemaking influences a sense of place through three psychological constructs

7.4.3 Placemaking as a protective factor in learning spaces

The learning space as a place is capable of engendering a sense of place in students. A sense of attachment, belonging, connectedness or bonding to school is considered a highly protective factor for student social emotional wellbeing across the developmental range (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Libbey, 2004; Ma, 2003; Payton et al., 2008). There is some debate in the literature as to the congruence of the constructs attachment, bonding, belonging and connectedness. This is reflected in the various scales, surveys and other tools that have been constructed to measure these constructs (Libbey, 2004). I am using the term place attachment to refer to the person-place bonds that develop over time in the context of learning places. Place attachment and school bonding are in my view closely aligned concepts.

Catalano et al (2004) reported on a longitudinal study conducted in Seattle, USA that followed a group of students through elementary school up to the age of 27 years. The authors applied a definition of school bonding drawn from control, attachment and social learning theories. The study concluded that school bonding (connectedness) was protective against school dropout, substance abuse, delinquency, gang membership, school misbehavior and violence. School bonding was associated with higher levels of academic achievement, pro-social behavior and increased levels of the desistence of serious delinquent behavior in high-risk individuals. Though this study applied a socialisation rather than a place attachment perspective, it is indicative of the power of student attachment to schools as being a protective factor.

The placemaking perspective offered here, adds considerably to the socialization dimension demonstrated by Catalano et al, (2004) as it includes physical, social, learning and identity dimensions through the four substantive categories identified in Chapter 6. Learning places are protective of student wellbeing when: they support the orchestration of learning through proven efficacious teaching strategies and approaches (Hattie, 2008); they afford opportunities for achievement as an individual and as a member of a learning community; they provide a comfortable, safe, relaxed and affordance rich environment in which to learn; they support identities in context; and they are inclusive, supporting pro-social behavior and social cohesion.

Teachers who actively engage in placemaking, experience their work environment as a positive place in which their personal and professional identities are supported, and their valued ways of orchestrating learning as a core role are enacted. Additionally, the learning space supports the establishment and maintenance of pro-social relationships built on trust and care. Finally, the learning space affords comfort, stimulation, access and flexibility of activity through developmentally appropriate furnishings, display and writing surfaces, the considered use of colour, zoning, lighting, management of glare, ventilation and cooling, consideration of acoustics, and the management of time (Bernard, 2012).

Placemaking teachers are creating a sense of place for themselves as well as for their students. They experience positive place-person bonds through attachment. They identify with the learning place in tangible ways and the place reflects back to them, aspects of their sense of self through the personalization that is a natural consequence of their placemaking. The learning place additionally meets the needs of teachers by helping them fulfill their roles, express themselves authentically and feel at home. The learning place supports teacher efficacy, reduces teacher stress and invites innovation and risk taking in the service of student learning and wellbeing.

Variability naturally occurs in any sample of primary teachers' placemaking behavior. In some instances primary teacher behavior could contribute to a negative sense of place in which the learning place is alienating, uncomfortable, time pressured, relationally stressful, chaotic and distracting. Even in this case, the placemaking perspective provides a starting point for helping such teachers to become aware of the impacts of their placemaking behavior on themselves and others and to highlight ways that they could transform the learning place experience into a more positive one for all.

7.5 Placemaking: theory into action

This study is concerned with listening to and theorising directly from the voices of primary school teachers. The pragmatic implications of the analysis of participant concerns and their resolution of these concerns are relevant in the day-to-day operations of primary teachers. They are also relevant when school communities decide to refurbish learning spaces and or plan new buildings as part of a school upgrade or even the establishment of completely new campuses.

Placemaking needs to take a priority role in the design of new and existing educational facilities in order to promote social emotional wellbeing and learning. In this way, the outcomes of schooling can be enhanced along with a strong connection to school as place. The latter has been demonstrated to be a highly protective factor in student social emotional wellbeing. In designing or refurbishing educational facilities, a placemaking component as part of the overall master planning process needs consideration. Further, placemaking occurs in the context of individual primary teachers' daily workflow in learning spaces. It therefore requires a degree of formal and informal reflection, integrated into existing teacher planning processes in context.

This placemaking perspective builds on current trends in mapping pedagogical values and principles onto, or in the design phase, of educational facilities master plans. A major concern for education facilities planners is to address how teachers, students, and community members will develop a sense of place through which they experience place attachment, identity and dependence, in order to enhance the experience of being in a place and undertaking the kinds of activities that the place is designed to support.

The study of how primary teachers perceive and resolve their main concerns in designing, managing and maintaining learning spaces can support overall facilities planning, and help teachers to be aware of the spatial dimensions that impact on the experience of being in learning spaces. Participants in this study highlight the complexity of the learning space environments in which they work. Grounded theory analysis of their photo-elicited reflections, hypothesise that they share a main concern with creating learning spaces to support the holistic development of their students. They resolve this concern as part of their daily workflow through four categories of action. These categories of action and experience operate as a transactional unity.

I propose that when primary teachers engage in these categories of action and experience they are placemaking. Their actions impact on the sense of place they develop for themselves and for their students. Orchestrating learning, Being in and maintaining relationships, Being in space and time and Maintaining personal and professional identities and roles impact on the teacher's experience of place in terms of attachment, identity and dependence. Their actions impact on the sense of place of students, through the dynamics of the transactional unities known as learning spaces. These hypotheses have practical implications at a number of levels from the design of educational facilities through to the daily operations of teachers in them.

7.5.1 Pedagogical Master Planning and Placemaking

Increasingly, education facilities master plans include consideration of the pedagogical goals of school communities in addition to the physical dimensions outlined by architects and education facilities planners. The work of Dr Ken Fisher and Rubida Research (Fisher & Sala-Oviedo, 2010) demonstrates how the educational perspective relating principles of pedagogy with design principles can support the development of schools in which there is alignment of architecture, philosophies and pedagogical practices. The process of pedagogical master planning is collaborative, and interdisciplinary, and seeks to integrate the principles of education from the holistic vision statements of systems through to the analysis of spatial implications in the implementing best practice pedagogy for 21st century learning contexts (Fisher & Sala-Oviedo, 2010). Principles of educational facilities design, individual school philosophies and effective pedagogy are integrated in the planning process to augment the architectural and design principles usually applied in education facilities planning.

Including the pedagogical dimension as part of the master planning process is a major step forward in giving voice to what is considered the primary purpose of educational facilities. That is, schools are sites of teaching and learning. The educational perspective needs to be privileged in the design process. The idea of designing a school purposely that impedes teaching and learning is ludicrous. The voice of educators in the design process is common sense, yet possibly not as commonplace as it should be.

A placemaking perspective could further enhance this approach to educational facilities planning at a number of levels. Placemaking can be used as a heuristic in the learning space context: by teachers operating alone or in teams, in single or groups of learning spaces, as part of a campus unit, or at the whole of school level. Schools at any point in their life cycle could benefit from a process designed to support reflection and action that supports a positive experience of the school as a place for all who attend there.

My analysis in this study, personal experience and reading, indicate to me that learning spaces encourage positive person-place bonds (attachment) when they afford:

- an aesthetically pleasing experience;
- physical and psychological comfort;
- opportunities for movement;
- age appropriate fittings and activities;
- flexibility and adaptability of furniture;
- opportunities for active social engagement and retreat;
- easy accessibility for a wide range of people with diverse physical and psychological skills and needs
- opportunities for pro-social interaction with peers;
- active engagement in formal and informal aspects of the behavior setting program;
- activities, relationships and spaces that support the identities of occupants in positive ways at the levels of self, place, family, community and citizen;

- a foundation for developing the holistic attitudes, understandings and skills to make negotiating other places with similar functions easier (primary school to secondary school to workplaces or higher education);
- accessibility to affordance rich environments;
- opportunities for self-determination and self-regulation;
- and opportunities to engage in placemaking as an individual and as a community of placemakers.

Learning spaces that support the development of a positively oriented sense of place are more likely to act as a protective factor for staff, students and community. They may also, through this protective form of attachment, contribute to the resilience of occupants, when stressful events occur.

This list is not exhaustive. A range of other environmental, and intra-psychological variables may influence an individual's sense of place. However, the participants in this study offered sufficient evidence for me to be confident in asserting that, physical, social, psychological and cultural variables working in a holistic fashion influence the dimensions of sense of place as outlined in this chapter.

7.5.2 Placemaking as a heuristic

In the context of this study, placemaking is seen as the way that primary teachers resolve their main concern regarding the daily operations of learning spaces. The participants in this study orchestrated learning, engaged mindfully in relationships, found ways to support their own identities as teachers, and made meaning out of the experience of being in place and time. Each of these dimensions of participant experience and action helped to resolve their main concern relating to the complex learning space they operated in. I have proposed that these domains of action constitute placemaking and impact on the teacher's sense of place. I have further proposed that placemaking, through its influence on place attachment, place identity and place dependence is a protective factor for teachers and for their students. I now demonstrate how placemaking can be used heuristically to support the evolution of learning spaces to learning places.

An example of emerging technologies to assist schools to assess the status of their learning spaces against indicators of best practice is the highly acclaimed Design Share publication, *The language of school design: Patterns for 21st century schools* (Nair, Fielding, & Lackney, 2009) draws on the work of Alexander (1979) to transform what he considered "dead spaces" into "living spaces". This is achieved through the explication of twenty-eight design patterns for generating options for school design in context. The patterns themselves have been distilled from the rich trans-disciplinary literature informing education facilities planning. The authors have developed a device called the Educational Facilities Effectiveness Instrument (EFEI) (<http://www.goodschooldesign.com>, 2014) that offers a 200 item evaluative checklist of design features across 35 design categories. I would anticipate the development of further instruments like the EFEI in the future as the ongoing concern with the role of educational facilities in the outcomes of schooling continues to attract public attention and funding.

The EFEI offers a rich and engaging process for schools to undertake in order to assess the functionality of their learning spaces and related facilities to meet the outcomes of schooling expected in contemporary society. It does not however specifically address the holistic concept of place and how a sense of place can be supported to contribute to the outcomes of schooling they seek. The danger of a reductionist approach to evaluating of school design is that the holistic vision of the place can be clouded by instrumental thinking (Williams, 2014).

In order to raise the awareness of primary teacher's awareness of the impact of place concepts on personal and student experience, using the categories of behaviour revealed by the participants in this study seems appropriate. The grounded theory analysis makes no claims about what is effective or not when it comes to teacher behaviour. The concepts generated account for a broad variation. All the participants in the study demonstrated zoning. How they zoned or its impact was not questioned. Likewise, all participants engaged in pedagogical problem-solving. One could expect significant variation among individuals in terms of the qualities of this process. Commencing with categories of activity that primary teachers are familiar with provides a point of connection to begin from.

To introduce primary teachers to the idea of placemaking and their roles in it, I developed and delivered a workshop "Teachers as Placemakers" (Hughes, 2013), for the 2013 National Learning Forum (Leadership Research International, 2013). In this workshop I trialed the application of the placemaking concept to a group of twenty teachers from across Australia who had self-selected to attend the workshop as one of a number of concurrent workshops on the day. The workshop was received positively by the participants who largely saw this as a new perspective on classroom / learning space evaluation. The workshop and associated documents are included in Appendix 1.

In this workshop, participants selected photographs of learning spaces to elicit evaluations based on the four substantial categories of this study in two different ways (see workshop templates in Appendix 2). These evaluations were then shared in groups. Group discussions formed the stimulus of a discussion on placemaking, sense of place, and how it might be promoted through this process of appraisal.

This workshop experience encouraged me to consider further how placemaking awareness and skills might be developed to assist teachers to create the kinds of places likely to support positive person-place bonds regardless of the resource constraints that many teachers experience. The beautifully designed and crafted spaces that adorn the internet sites of many school architects are far from the norm in Australia in my experience. They are aspirational for most communities. Still, the analysis of participants' reflections in this study encourage me to consider the potentials that might be realised should the process begin with an acknowledgement of what teachers are actually doing as they go about placemaking as part of their daily workflow.

A placemaking component of master planning, would pose questions to the school community at the planning stage to address the following:

- What qualities of space and time will contribute to a strong, positive, sense of place associated with this facility?
- What qualities of the community and landscape context contribute to a sense of place for the school population?

- How will the learning spaces (formal and informal) assist teachers to orchestrate learning in a 21st century context?
- How will the learning spaces and other facilities support pro-social behavior and positive relationships?
- How will the learning spaces support the development of personal and professional identities for staff, students and community?
- How will the learning spaces afford physical and psychological safety, enjoyment and motivation?
- How will the learning spaces support the psycho-social processes of:
 - place identification (a sense of belonging to a place, of being an insider);
 - place attachment (person-place bonds);
 - place dependence (a sense of having one's needs met by the qualities of a place)?

Each of these questions invites a further range of questions based in part on the findings of this study. In asking about the qualities of place that facilitate orchestrating learning, one can consider properties of this category such as: zoning; philosophizing; maximizing productivity and minimizing distractions; responding to individuals; monitoring and looking forward. (How will the learning spaces in this context support zoning? How will the learning spaces facilitate responding to individuals?) When considering the category of being in and maintaining relationships teachers can consider how the place they are making in collaboration with others, will support the qualities of relationship they see as being desirable. If caring, respectful, nurturing qualities are desirable, how will the learning place support the establishment of these qualities?

The advantage of this type of questioning is that it helps teachers to review what they already do. Rather than making evaluative statements about what is best or inadequate, the conversation can be around what teachers do in learning spaces and what would help them to do that better. Many primary teachers continue to operate in bounded learning spaces where they work on their own with a group of children for a period of one year. New facilities continue to be constructed on this model of school organization. Granted, a greater range of varied learning spaces designed to meet specific learning situations is also being constructed alongside classrooms, but the practice of housing groups of children in single bounded learning spaces remains common. In addition to the five sites included in this study I visited an additional five sites that either had been recently constructed or had undergone major renovations. In all cases, despite the inclusion of some innovative design features such as trade kitchens, science project spaces, and media facilities, the basic unit of organization and workspace for teachers and students was the single classroom. Many new classrooms that I observed were arranged in the same way that my childhood classrooms were arranged. I also saw examples of innovative practice in aged buildings where little had been done to maintain let alone improve the quality of space. Overall, it was difficult as a visitor to discern how the facilities I visited explicitly engendered a sense of place.

Helping teachers to address the pragmatic acts of placemaking through what they already do as designers, managers and maintainers of learning spaces on a daily basis is one approach that could complement the master planning, visioning, pedagogy mapping, ICT upskilling and educational facilities effectiveness appraisal processes that are already used to plan new and refurbish older educational facilities.

Teachers can be encouraged and supported to address placemaking as part of their own professional practice. Education facilities planners in collaboration with architects and school communities could consider placemaking as part of the master planning process for all facilities. Given the protective nature of connection and belonging in the lives of teachers, students and communities, the question at all levels of planning and action is, “How will this place engender positive person-place bonding through place attachment, place identity and place dependence?”

Chapter 8: Conclusions and implications

8.1 Introduction

This final chapter of the thesis returns to the purpose of the study and demonstrates how this was achieved through the generation of a substantive theory. Chapter 8 demonstrates the contribution that this study makes to the disciplines of education and environmental psychology. It also demonstrates how the study contributes to research methodology applied in a cross-disciplinary study. Limitations of the study are discussed before moving onto possibilities for future research endeavors.

8.2 Purpose and delimitation of the study

The core purpose of this study is to build on existing understanding of how primary teachers operate in the context of learning spaces. Such enhanced understanding opens possibilities for improving the quality of evidence needed to persuade public policy makers, educational facilities planners and primary teachers of the value of analyzing the experience of practitioners, in the context of learning spaces.

Delimiting the study was necessary from the outset as educational facilities and formal schooling arrangements span such a broad scope. I work as a lecturer in a university context supporting pre-service teacher education and postgraduate education programs for teachers. Additionally, I spent twenty-two years of my career working in schools in both primary and secondary education settings. As someone who worked in consultative special education and guidance counseling roles for a substantial period of my career, I had the fortunate opportunity to have visited hundreds of classrooms across scores of schools in rural and regional urban settings. My reflections on this experience through an environmental perspective, indicated that primary teachers had significant agency in their learning space settings. Additionally, they invested substantial amounts of time and energy in setting up and maintaining those spaces to help them achieve their intentions as educators.

In Chapter 3 I asserted that the focus of researching the impacts of environmental variables on academic outcomes had crowded out the voice of primary school teachers who occupied learning spaces as part of their daily workflow. I also asserted that in order to achieve a clearer understanding of how teachers design, manage and maintain learning spaces as part of their daily workflow, it was necessary to seek out the reflections of practicing teachers in this regard and build a substantive theory that would help to account for primary teacher behavior in context.

Additionally, grounded theory methods from a classic or Glaserian perspective were deemed appropriate for collecting and analyzing data and building substantive theory. A modified grounded theory approach was adopted to address the research problem and this helped to shape the research questions that follow:

1. What is the main concern of primary school teachers as they design, manage and maintain learning spaces as part of their daily workflow?

2. How do primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
3. What theoretically accounts for the ways that primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
4. What practical implications for primary school teachers and education facilities planners, derive from understanding how primary school teachers resolve their main concern associated with their engagement with learning spaces as part of their daily workflow?

8.3 Generation of a substantive theory

8.3.1 Nature of substantive theory

Glaser and Strauss (1971) make a distinction between substantive and formal theory.

“By substantive theory we mean theory developed for a substantive or empirical area of sociological inquiry, such as patient care...By formal theory we mean theory developed for a formal or conceptual area of sociological areas such as passage status, stigma, deviant behavior...” (Glaser & Strauss, 1971, p. 77).

Bryant and Charmaz (2010) define substantive theory as being “a theoretical interpretation or explanation of a delimited problem in a particular area, such as, family relationships, formal organisations, or education” (p. 610). I have generated a substantive theory in this study that represents a theoretical, interpretive account of how a group of primary teachers resolve their main concerns as they go about their daily work practices. The empirical field is primary teacher design, management and maintenance of learning spaces. The theoretical account for how they resolve their main concern in this field was generated through the application of grounded theory methods.

The substantive theory generated by this study is summarized as follows:

Primary school teachers in this study enter into the learning spaces they are allocated (classrooms) or adopt (informal & formal spaces such as gardens, sports fields, gymnasiums, covered play areas, swimming pools, community settings) with a range of predispositions and intentions (some personal and some institutional). They experience the complexity of the environment as physical, social, psychological, pedagogical, transactional and holistic. Complexity demands in the moment adjustments to teacher behavior across a broad range of dimensions. Teachers share a main concern in context that must be resolved in order to maintain the integrity of the behavior setting and allow a sense of continuity for participants. The hypothesised main concern; Creating complex multi-faceted / multi-purposed spaces that shape, afford and optimize creative learning and teaching behavior, pro-social interactions, a positive contribution to identity, and having a particular focus on the learner as a self-regulating individual in a social context; requires ongoing resolution in the context of daily workflow. Their resolution behavior is accounted for through four substantive categories of action and experience: Being in and maintaining relationships; Maintaining personal and professional identities; Orchestrating learning and Being in

space and time. Engagement by the participants in these categories of behavior is proposed to constitute a theoretical category, placemaking, that influences their own and others' sense of place in the learning space context.

8.3.2 Generation of substantive theory

Figure 8-1 graphically represents the substantive theory generated by this study of primary teachers actions and experiences in the context of their daily workflow and how they design, manage and maintain learning spaces. The two-way arrows in the diagram represent the non-linear, mutually shaping influences of one dimension on the other dimensions. Each element recursively influences the others to form a dynamic system and transactional unity.

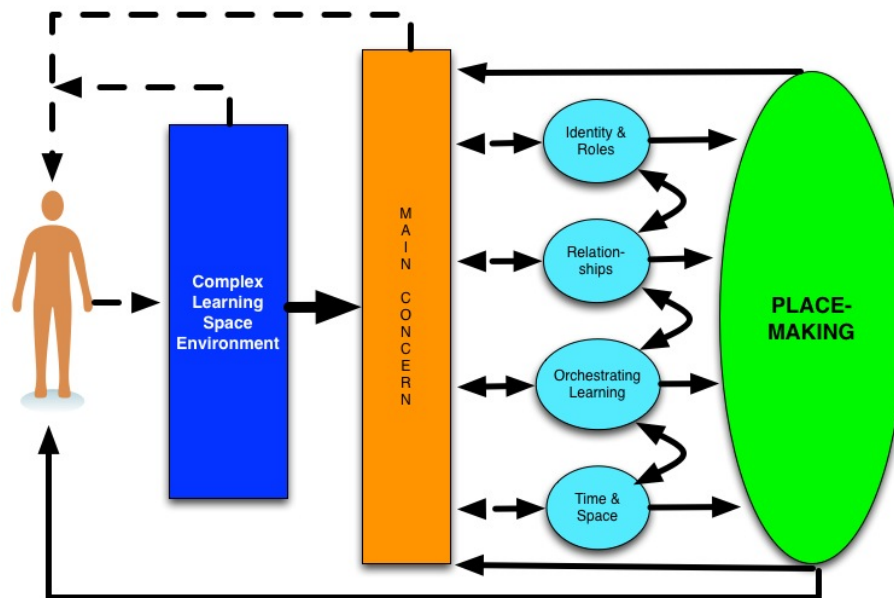
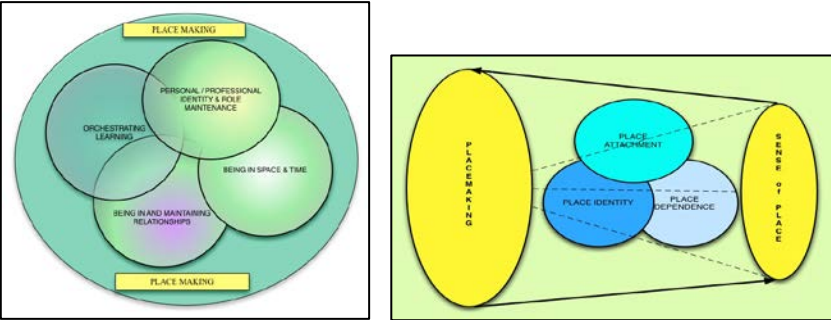




Figure 8-1 Substantive theory diagram

Table 8-1 summarizes the research process and demonstrates how the substantive theory was generated. This table is read from the bottom up to reflect the grounded nature of the methodology and its yield. The two right hand columns represent the ongoing processes of constant comparison and memoing across the life of the study.

Table 8-1 Summary of the process used to generate a substantive theory of how primary school teachers design, manage and maintain learning spaces as part of their daily workflow

<p>7. Substantive Theory:</p> <p><i>Primary school teachers in this study enter into the learning spaces they are allocated (classrooms) or adopt (informal & formal spaces such as gardens, sports fields, gymnasiums, covered play areas, swimming pools, community settings) with a range of predispositions and intentions (some personal and some institutional). They experience the complexity of the environment as physical, social, psychological, pedagogical, transactional and holistic. Complexity demands in the moment adjustments, to teacher behavior across a broad range of dimensions. Teachers share a main concern in context that must be resolved in order to maintain the integrity of the behavior setting and allow a sense of continuity for participants. Their resolution behavior can be accounted for through four substantive categories of action and experience. Engagement in these categories of behavior is proposed to constitute a theoretical category, placemaking, that influences their own and others' sense of place in the learning space context.</i></p>		<p style="writing-mode: vertical-rl; text-orientation: mixed;">MEMORISING</p>	
<p>6. Theoretically integrating the substantive categories.</p>	<p>Placemaking is proposed as the theoretical category that integrates the four substantive categories engaged in to resolve the main concern.</p> 		<p style="writing-mode: vertical-rl; text-orientation: mixed;">MEMORISING</p>
<p>5. Testing and refining the substantive categories</p>	<ul style="list-style-type: none"> • Testing for goodness of fit: professional conversations; member checking; workshop design and delivery • Alignment and misalignment with literature • Constant comparison up and down the analytic process 	<p style="writing-mode: vertical-rl; text-orientation: mixed;">CONSTANT</p>	
<p>4.b Synthesizing the main concern</p>	<p>Comparing statements of concern generated in 2.b and generating one synthesis statement of main concern shared by participants.</p>		<p style="writing-mode: vertical-rl; text-orientation: mixed;">MEMORISING</p>
<p>4.a Substantive categories generated through fourth level coding</p>			
<p>3.</p>	<p>Categories refined by third level coding.</p>		
<p>2.b Hypothesizing</p>	<ul style="list-style-type: none"> • Initial audio recordings of all interviews reviewed with attention focused on hearing the embedded main concerns of participants. 		

the main concern	<ul style="list-style-type: none"> • Constant comparison applied across audio data, repeating ideas analysis, second level categories. 	C O M P A R I S O N 	
2.a Categories generated through second level coding.	<ul style="list-style-type: none"> • Patterns in the data perceived and named as concepts/codes using mostly gerunds • In vivo codes identified • Memoing used to explore categories for possible development of main concern 		
1. Open coding of rich data: <ul style="list-style-type: none"> • Photo-elicited interviewing process. • Open coding of transcripts with reference to participant photographs of learning spaces referred to in their interviews. • First level patterns named as codes. 			

8.4 Contribution to the field

8.4.1 General comments

This study contributes to our understanding of how a group of primary school teachers resolve their main concern in relation to their daily engagement with learning spaces. It contributes to the empirical and theoretical understanding of the perceptions and subsequent actions of a specific group of professionals in the context of their daily work. This research supports the foundation assumptions of the transactional perspective in environmental psychology.

Additionally, it draws on existing theory of Sense of Place and the constructs that contribute to this as outlined by Jorgensen and Steadman (2006). The unique contribution in this regard is the way that the research theorizes the recursive, reciprocal relationship between primary school teachers' actions in context from a holistic perspective, and the impact that these actions have on the development of sense of place through strengthening person-place affective bonds (place attachment), the perception that place meets personal needs (place dependence) and the maintenance of personal and professional identities in context (place identification).

The subjective reflections of a group of primary teachers through their digital photography and related interviews, indicates that these participants are aware of the complexity of the learning space environment. Their reflections afford empirical evidence that they apply holistic thinking in their descriptions of learning spaces and how they function in them. As researcher, I was particularly interested in the impact of the physical environment and its tangible and intangible qualities on how teachers made decisions on a daily basis about the learning spaces they occupied. I found that the participants did not divide their experiences up into specific elements that impact in different ways on them. They related more holistically and transactionally than this. Their reflections indicated that they constantly monitored the learning space environment and adjusted to the shifting qualities of that environment in relational, pedagogical, and identity terms, along with a response to the physical environment.

The physical qualities of the environment stimulated an aesthetic and a pragmatic response that aligned with teacher intentions as articulated in the statement of main concern.

The physical environment presented a different range of challenges across sites. In the one site where the refurbishment of learning spaces to more open, collaborative, multi-zoned, affordance rich environments had occurred, the teachers who had previously practiced in teacher-centered environments had a struggle to adapt. The spaces challenged them in pedagogical, relational, identity and physical ways. In another site where demountable buildings were used to house large classes the constraints of the space in terms of crowding and lack of opportunity for zoning and collaborative approaches placed different constraints on teachers. The amount of available space and the numbers of children occupying this space appeared to drive some teachers to more teacher-centered pedagogical behavior while ample space relative to occupants and alternative, modernized furniture and fittings appeared to support more collaborative, student-centered, inquiry-based pedagogies.

By asking participants about their ideal learning space imaginings, it was apparent that the ideal and the current reality sat in tension with each other most in those spaces where crowding was apparent. These spaces were also more traditional in set up, furniture and fittings with limited opportunity for zoning. The finding of most interest for me here is that the participants described learning spaces holistically and transactionally rather than merely pedagogically. As evidenced in the literature survey relating to 21st century learning space developments, the pedagogical affordances of learning spaces are a core concern. Learning spaces are being designed to facilitate the application of those pedagogies that best align with valued 21st century skills development. In the site where refurbished spaces had occurred the intention was to create spaces that better aligned with the emerging agenda of 21st century learning environments. In the other sites, the participants were making do with what they had. The 21st century learning environment agenda and its associated pedagogical approaches was not a tangible feature of these spaces. Additionally, the participant's subjective reflections of these spaces did not suggest a concern with this agenda in any substantial way.

One of the contributions of this research is that it does not differentiate between either type of site in evaluative terms. This study accounts for variation of teacher behavior through generating conceptual categories that are inclusive. The emphasis is on process rather than product. Across sites, the participants are all engaging in the substantive categories to resolve their main concern. This main concern is hypothesised as being shared across contexts. Additionally, the participants all engaged in action and experience through the substantive categories hypothesised by the study, all be it in unique ways. However, the physical differences across sites suggests that educational facilities planners need to address the ways that physical spaces are acting as barriers to the implementation of contemporary educational agendas. Aligning educational facilities, teacher concerns, and the ways they resolve these concerns, with the contemporary educational agenda, may lead to tangible improvements in the outcomes of schooling.

8.4.2 Contribution to education

This study reinforces the need to research primary school teachers' perceptions of how they operate in learning spaces in a routine fashion. The holistic and transactional perspective offered by the participants, highlights the need to consider learning spaces from a number of perspectives that teachers see as being relevant to their daily activities. Learning spaces are complex, relational, pedagogical, identity shaping spaces as well as affording a great variety of subjective experiences through the transactions between occupants and the physical qualities of the space. The substantive categories generated from participant data are inclusive of considerable variations in actual teacher behavior and experience. This makes them suitable as a heuristic for professionals to begin to explore their perceptions of the role of learning spaces in the holistic functioning of the environment that supports or thwarts their endeavors to promote learning. The added dimension of a systems perspective, highlights that changes in one category cannot be quarantined from the others in the system. An awareness of this helps practitioners to see the holistic and transactional nature of the person-in-environment phenomenon. Though orchestrating learning is expected to be a priority for most teachers, the impact this has on identity, roles, relationships and the physiology influencing qualities of a space should not be discounted.

This study also highlights the complexity of the learning environments engaged in by primary teachers on a daily basis. By identifying their main concern in this space and categories of behavior that resolve that concern, teachers can be supported to address barriers in their current learning spaces proactively.

The generation of the theoretical category, placemaking, helps practitioners to understand how the experience of place influences person-place bonding, place identity and place dependence. This is a valuable contribution as positive school bonding (attachment) is reported (often as connectedness, bonding, and belonging) to be a protective factor in the wellbeing of children and their teachers (Bergin & Bergin, 2009; Catalano et al., 2004; Libbey, 2004; Ma, 2003). This study hypothesises that teachers are placemakers through the resolution of their main concern with learning spaces. How they make decisions, solve problems, and behave in the context of the learning space is hypothesized to influence their own and students' sense of place. Affective bonds, an alignment between place and sense of self, and evaluations that indicate a place meets one's needs, support the development of a positive sense of place. Given the demonstrated link between connectedness and belonging in the learning space and wellbeing, further research to verify a relationship among the constructs involved in sense of place, connectedness and belonging in the learning space context is warranted. Generating evidence-based strategies to address student and teacher alienation in the context of place is a solid foundation for a research program.

The contributions that this study makes to the discipline of education theory and practice is summarized by the following list:

- focus on teacher voice through the use of grounded theory methods
- using teacher voice to theorize on the way that teachers resolve a main concern around part of their daily workflow

- offers a useful heuristic for enhancing place attachment / identity/dependence as a protective factor to reduce student and teacher alienation
- by beginning with an examination of what teachers actually do in context, the heuristic is personalized
- the placemaking process can be applied to multiple contexts across the ecology of an education setting
- advances high quality educational practices in the 21st century context.

8.4.3 Contribution to environmental psychology

8.4.3.1 Introductory comments

As outlined in Chapter 2 and Chapter 3, environmental psychology has contributed to the understanding of how a range of environmental variables can influence human behavior in educational contexts. The greatest contribution has come through the exploration of external environmental variables on the academic performance of school aged children and young people. This study aimed to give voice to the experience of primary teachers who operate in learning spaces as part of their daily workflow and explore how they made decisions in context. The major contributions that this study makes to environmental psychology are, its focus on the holistic, contextual, transactional, systems oriented perspective on primary teacher action and experience in context; the framing of a reciprocal relationship between placemaking and sense of place as a protective factor; and the use of photo-elicited interviewing with grounded theory methods to empower participants and support the credibility of the study findings.

The following list summarizes my claims to contributions of the study as they relate to environmental psychology:

- supports the trans-disciplinary and pragmatic attitude of the discipline
- refocuses the EP contribution to educational facilities planning from the impact of environmental variables on academic outcomes to teacher behavior and experience in context.
- provides an example of theorizing from rich qualitative data
- demonstrates the usefulness of the Sense of Place construct in educational settings
- demonstrates how EP can support transformative approaches in educational practice
- demonstrates how existing theories of place can support theorizing in other disciplines.

8.4.3.2 Transactionalism

Gifford (2009, p. 388) asserted,

Transactional approaches to any and all of the problems that environmental psychologists attempt to understand and solve have been suggested for decades, but are rarely employed... Perhaps we can describe person–environment relations with transactional lenses in a satisfactory way by employing a narrative approach, but we seem to be stumped when it comes to empirical transactional investigations.

This study contributes to the body of empirical research in environmental psychology that applies a transactional perspective to a substantive field in order to build theory. I outlined the assumptions underlying the transactional perspective applied in this study in Chapter 2. The approach used in environmental psychology to explore educational environments has largely focused on the impacts of external environmental variables such as noise, air quality, daylighting and color, on academic performance. This study explored how primary teachers thought about the learning spaces they occupied and how they made decisions in context to use the affordances of spaces in particular ways as part of their routine work. As a result, the study highlights the holistic, transactional and systems oriented perspective of the participants who demonstrated an awareness of the complexity of the environments they occupied, and the need to make constant adjustments to the various dimensions of complexity that influenced their own and student behavior and experience.

Participants were given the freedom to make their own decisions about what they considered to be learning spaces, and the qualities or features they thought were relevant to them, so the data had a high degree of ecological validity. This ‘real world’ dimension highlights the holistic perspective taken by participants as they reported on the social, psychological, functional, physical, pedagogical, learning and student related variables that form transactional unities in the context of the learning space. Changes in any one dimension of the space flow onto to the other dimensions and participants are required to constantly adjust to these changes moment by moment.

The value of this contribution is that it lends evidence to the dynamic nature of environments and the need to explore multivariate influences in order to maximize any potential benefits that may flow on from changes instituted by occupants or stakeholders. It shows for instance that if a learning space is crowded, teacher behavior is pedagogically restricted. This creates a certain type of relational environment that can sit in tension with the teacher’s professional and personal identities. In order to adjust to spatial constraints the teacher is required to reconsider their approach to teaching and managing students. This can create misalignments between what a teacher values philosophically and what their practices are in context.

A teacher’s sense of place (place attachment, place identity, place dependence) may well be negatively or positively influenced by changes in many environmental variables both physical and social. Understanding this helps researchers to hypothesise the possible impacts that certain changes might have in the learning space system and its experience of it from a teacher perspective. Additionally, helping teachers to be conscious of this transactional and systems oriented perspective could help them to functionally adjust to environmental changes and to promote changes that facilitate a positive sense of place for themselves and their students.

8.4.3.3 Placemaking and Sense of Place Recursion

Placemaking as outlined in Chapter 7 is not usually associated with the psychological accounts of how people experience place and give it meaning. Environmental Psychology focuses on providing theoretical accounts of the psychological experience of place through cognition, affect and behavior. Hypothetical constructs such as place attachment, place identity and place dependence are proposed as cognitive and affective processes and states that

influence behavior and the subjective experience of being in an environment that has particular qualities. Though sense of place has more recently been theorized through psycho-social and discursive representations (Bonnes & Secchiaroli, 1995; Scannell & Gifford, 2010; Williams, 2014), the research focus remains largely on the individual subjective experience of place as opposed to how people behaviorally contribute to the construction of place meaning for themselves and others.

David Seamon (2014) using a phenomenological perspective proposed six place processes related to place attachment. Two of these relate to how place is constructed by human actions: place creation and place intensification. These two place processes demonstrate how people intentionally generate place through their “commitment to and empathic knowledge of place” (Seamon, 2014, p. 30) with both positive and negative results. In this study, I propose that primary teachers construct learning places through their actions across the four substantive categories outlined in Chapter 6. They are in this sense placemakers. I take one further step to relate this placemaking behavior with the sense of place construct and three subordinate constructs; place attachment, place identity and place dependence (Jorgensen and Steadman, 2006). I propose that the experience of place, specifically, learning place is mediated by engagement in the four substantive categories as participants in the study seek to resolve their main concern.

Rather than proposing a generalized formal theory of placemaking, I have kept to the boundaries of the study to generate a substantive theory that applies to the cohort of primary school teachers participating in the research. This is not so much a limitation as it provides some evidence for a set of behavioral domains that the participant teachers engaged in to influence their sense of place and that of their students. The implications of this localized perspective are significant if we consider how best to promote change in behavior to help promote a positive sense of place for staff and students in schools. A positive person-place bond, a sense of place that supports identity and meets personal and collective needs is considered a protective factor for social emotional wellbeing. Social emotional wellbeing is positively associated with higher academic outcomes, reduced anti-social and self-destructive behavior and increased retention rates (Payton et al., 2008).

An additional contribution to environmental psychology comes through the methods used to conduct this study, in particular, the use of photo-elicited interviewing. I discuss this in the following section.

8.4.4 Methodological contributions

8.4.4.1 Introductory comments

The contributions that this study makes to the methodological dimension of environmental psychology are summarized below:

- innovative in the use of photo-elicited data gathering methods that resolve issues of researcher bias, participant reactivity, and improve ecological validity
- demonstrates the application of trans-disciplinary approaches to research
- applies grounded theory methods in a way that bridges the positivist-constructivist divide

- demonstrates the flexibility of the classic grounded theory methodology
- empowering for participants; facilitates professional reflection and growth
- demonstrates the application of a holistic, contextual, transactional, systems oriented perspective in a pragmatic way.

8.4.4.2 Reflexive Photo-elicited Interviewing

In my view, one of the contributions this study makes is to the participants. The research process itself can help teachers to reflect on their main concerns in relation to the learning spaces they occupy and how they go about resolving these. This is a contribution to the participants who generously offer their time and reflections for analysis by a researcher who, in this case, was a stranger to most of them. Finding data gathering strategies that benefit participants in some way demonstrates that the information they provide is valued and the process is professionally or personally helpful. I used reflexive photo-elicited interviewing (Hurworth, 2003) as a way of gathering rich data for analysis using grounded theory methods (Glaser & Strauss, 1967; Glaser, 1978; 1992; 1998; 2001; 2003; 2005; 2011).

Reflexive photo-elicited interviewing has a number of benefits to offer qualitative research projects. By giving participants minimal directions and the freedom to take pictures of whatever they feel represents the broad field under investigation, greater sense of participation and personal connection to the data is facilitated. The researcher need only provide minimal directions during the open interview phase. Participants choose how they layout the photos and how they will address them. This aids in the participants recall, prompts deeper reflections and opens the interview to move into unpredictable topics and perspectives (Hurworth, 2003).

Participants in this study reported that the method was significantly easier for them to negotiate than traditional interviews due to the visual content and the freedom afforded. This is consistent with the advantages reported by Hurworth in her synthesis of the literature relating to the method (2003).

For a qualitative researcher the insider perspective is important and the use of participant photographs provides this perspective through multimodal representations. The interview provides the verbal and non-verbal communication that is ultimately transferred to text. The photos make it easier for the researcher to be confident that what the participant is providing narrative about is actually visible to the interviewer. This is a support when claiming ecological validity. The participant is someone who is engaged in the field of investigation, is reporting on their engagement in that field and has made photographic representations of the contexts they are reflecting on. This reduces the possible gap between the subjective reflections of the participant and the accuracy of these as representations of actual events, places, cognitions, affect and behaviors in context. It is acknowledged that the gap can never be closed. However, the researcher can see and has an artifact for later referral of the context that the participant is describing.

Having artifacts of the participant's reflections in the form of photographs also provides an additional source of data for analysis. Patterns in the photographs can be discerned across sites and participants during analysis. This can reveal new

perspectives and questions in the data. It can also provide a point of triangulation for the researcher when generating codes. For instance, when I generated the code, zoning, from the interview transcripts, I was able to search the photographs for evidence of this. The photographic evidence supported the code in a very tangible way. When P3 spoke of her use of outdoor spaces to help promote attention span development, engagement, relaxation and motivation, she mentioned qualities of the spaces such as the regular breeze that flowed onto a verandah. By referring to the photographs I was able to get a much more holistic experience of her words and see how the spaces might help her to achieve her intentions.

An additional advantage to the provision of photographic data is that the reader of the research report is given an additional source of information to support their own analysis of the credibility of claims made by the researcher. Figure 8-2 below is an example of this aspect of support for the report reader.

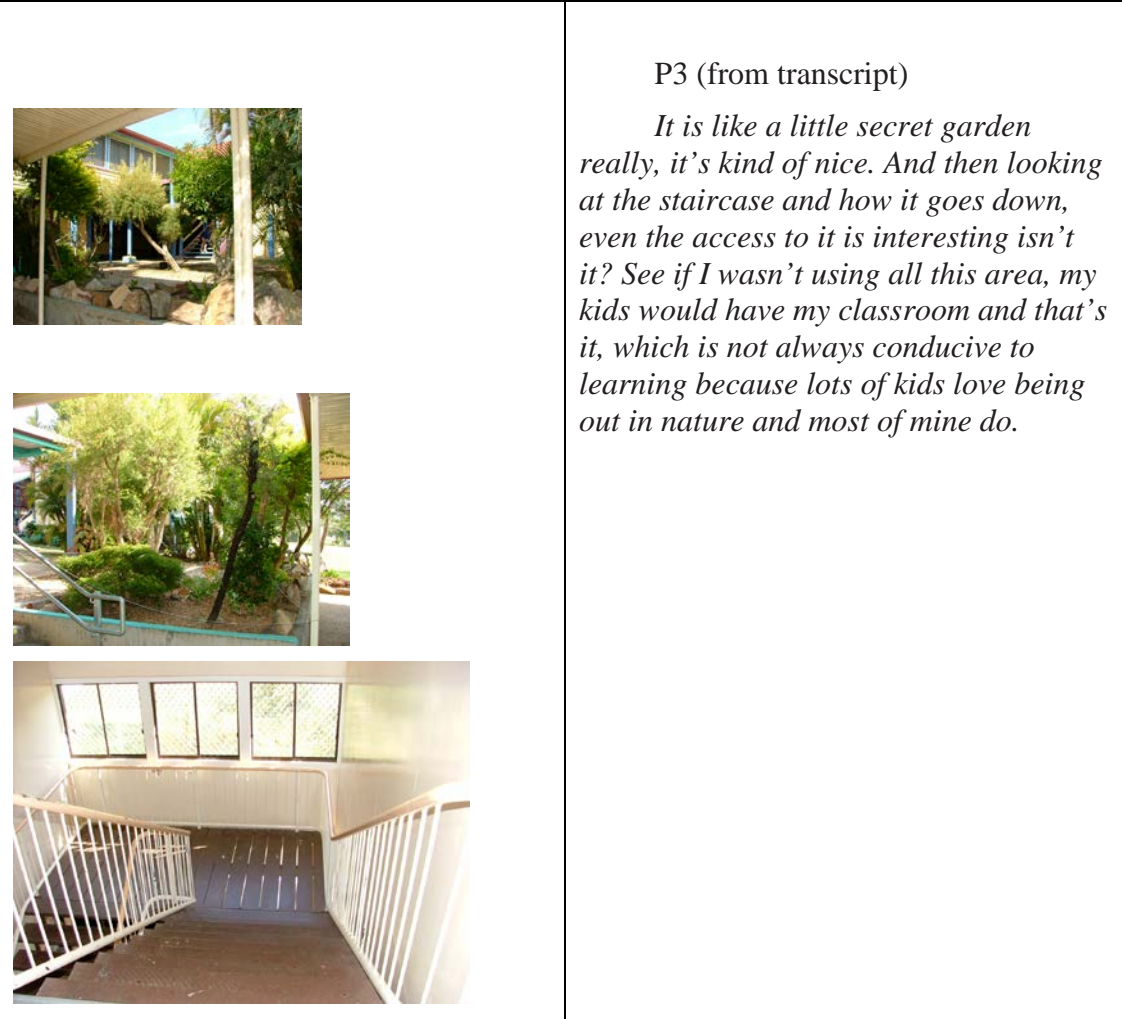


Figure 8-2 Photo and transcript alignment

8.5 Trustworthiness and Limitations of the study

Limitations of a research study are concerned with those qualities of the research process that make the trustworthiness of the findings questionable. They also relate to the extent that the research yield can be generalized beyond the sample

population in the substantive field in which the research was conducted. This study generated a theory of how a group of primary teachers resolved their main concern around the design, management and maintenance of learning spaces as part of their daily workflow. As such, the theory pertains to the substantive field from which data was drawn, analyzed and conceptualized into a set of hypotheses (theory). The theory accounts for variation in the behaviors of the participants through inclusive categorization or naming of patterns behavior. Behaviors can be disparate but still belong to the same category of behavior.

The methodology used in this study involved inductive analysis of rich data drawn from participants directly engaging in the field under investigation. Credibility for the findings is supported by this, especially through ecological validity. A range of strategies were included to further enhance my confidence in the research process:

- the theory achieves credibility by being grounded in empirical data systematically collected and analysed
 - the analytical process is transparent and evidenced by the processes of coding, memoing, authenticity of data
 - researcher bias is accounted for by making reflexivity an explicit feature in reporting on the research process and its yield
 - reactivity, in this study is minimized by the use of the reflexive photo-elicited interview process
 - the categories that are generated by the researcher through the constant comparison process, can be logically deconstructed back to the original data from which they came
 - the theory fits the field under investigation
 - the theory works to account for the relevant and variant behavior in the substantive field
 - the theory has relevance for those in the substantive field
 - the theory is modifiable as new data emerges
- Adapted from: (Glaser, 1998; Glaser & Strauss, 1967)

Despite these protective factors for the study's credibility, all researchers are encouraged to continually interrogate themselves and their findings with the question, "How might I be wrong?" (Maxwell, 2013).

8.5.1 Limitations

8.5.1.1 Member checking

There are a number of points along this research journey where I may have over reached with my interpretations. Categories were named as patterns I discerned in the data. I rejected single incident codes in the analysis, setting them aside for review as the analysis progressed. Only patterns made up of multiple incidents made it into categories. However, there is always the chance that once I discerned a pattern, I may have begun to 'force data' into that pattern. Though I subjected my conceptual categories and emerging theory to a degree of member checking, this was not a strong feature of the research process and could have been strengthened. Designing a workshop that required a group of twenty teachers from a national audience, to engage in analysis of photographs of learning spaces using the four substantive categories of the study, gave me a degree of confidence that there was resonance between the study and a broader group of professionals in the field.

Charmaz (2006) includes resonance and usefulness as two criteria for the evaluation of a grounded theory. I am satisfied that the theory built in this study meets those criteria. At the same time I would like to have subjected the analysis to a greater degree of participant member checking.

Given the nature of PhD research, verification of findings through the use of inter-rater agreement with analysis findings is problematic. I undertook the analysis as sole researcher, so this precluded reference to inter-rater reliability. To the extent that the study is hypothesis generating and truth claims are not asserted beyond the context of the study, I feel that this limits the erosion of credibility from this source. In future verificational research, the use of a number of analysts along with a group process to compare codes and categories generated from data would be advisable.

8.5.1.2 Forcing the data

Glaser (1998) describes forcing the data as a natural human tendency. One way that data can be forced is to see it through the lens of a grand theory, paradigm or perspective that one holds to be true. In this study I departed from Glaserian grounded theory by engaging at depth with a broad range of literature pertaining to the topic. I also included a conceptual framework that outlined a particular frame with which I intended to engage in the research project. This frame could be considered a constraint to my capacity to be open to the data and not to force it to fit my worldview. I have noted the protective factors associated with my theoretical claims above, however, I accept that a criticism of my approach along the lines of forcing the data from a Glaserian perspective may have some credibility. On the other hand, I believe that I took considerable steps to remain open throughout the conceptual process and avoid consciously generating findings that seemed to fit a preconceived theory. I believe the substantive theory generated through this study is grounded in the rich data gathered from participants and has a considerable degree of ecological validity as a result.

8.5.1.3 Generalization

Identifying the limitations of a study is not entirely a process of questioning internal trustworthiness. Limitations also refer to the application of the “research results, conclusions, or other accounts that are based on a study of particular individuals, settings, times, or institutions to other individuals, settings, times of institutions than those directly studied” (Maxwell, 2013, p. 136). Non-probability sampling was used in this study to ensure that the participants were all current practitioners in the primary school learning space context. This substantive field formed the context for investigation and the resulting theory is a substantive theory. That is, it applies across the contexts in which the study took place. Internally, the theory accounts for variation in the behaviors of participants through the process of code and category generation on the basis of patterns discerned in the data. These categories are inclusive of wide variations in individual behaviors that still meet the requirements for inclusion in a category.

The study is hypothesis generating and the substantive theory generated is a set of hypotheses. External generalization is not presumed. Verificational research is needed to test the theory of placemaking by teachers in learning space contexts across a broader range of primary school settings with a corresponding range of conditions and mediating factors.

8.6 Future research opportunities

Grounded theories are sets of hypotheses in themselves (Glaser, 1992) and hence, are open for verificational research. Such research is required to achieve the level of statistical confidence needed for cross-population generalization. It would involve quantitative research methods, probability sampling, survey instruments, factor analysis, identification of predictor, mediating, dependent and independent variables, and correlation analysis of variables to generate descriptive and interpretative statistical information and models. The key questions for verificational researchers are:

1. Does the hypothesized construct, placemaking among primary teachers exist?
2. What is the structure of the construct?
3. How does it work to account for the variation of human behavior in context?
4. Can it be predicted to manifest in only particular or across populations?

Further qualitative research of a similar nature to this study would help to create greater clarity around the many concepts expressed in the analysis and their possible relationships to each other. This research would continue the grounded theory process through extensive theoretical sampling based on the categories generated to account for the resolution of the participants main concern. Verification of the main concern itself would be helpful through a process of surveying participant's agreement with the dimensions of the individual and synthesized collective statement of main concern.

One issue that emerged from this study was the way that a group of primary teachers in one site reacted to, coped with and adjusted to refurbished learning spaces that presented a range of challenges across the four substantive categories. This group of teachers indicated that the refurbished spaces presented them with challenges that required ongoing pedagogical problem-solving, balancing competing demands, reflection on teacher roles and identity, relational engagement with peers, students and their parents/caregivers, and that motivated them to consider the role of a broad range of environmental factors in the teaching-learning enterprise. They also indicated that professional growth was gained by addressing the challenges of the environment to find ways that the environment could better contribute to the overall outcomes of schooling for children.

This scenario is being played out across Australia and internationally as education systems are forced to either refresh existing educational facilities or construct new ones in order to cater for population increases and ageing assets. Understanding how new and refurbished facilities impact on teacher behavior is worthy of research. Determining the impact of teacher attitudes, systemic support in times of change, the role of sense of place in coping with change and creating new places, the influence of planned affordances and how these influence teacher behavior, would assist education facilities planners to understand the phenomenon of teacher resistance.

A body of research literature exists that attempts to address the structure and dynamics of the experience of place. There is ongoing concern however, over the lack of consensus around what is being measured and how best to measure it (Hernandez et al., 2014; Hildago & Hernandez, 2001). Perhaps one strategy to gain

some conceptual clarity is to research how the actions and perceptions of people occupying specific places for specific reasons impact on sense of place and related constructs. This research project provides an example of this. The behavioral categories generated to account for how the participating primary teachers resolve their main concern demonstrates that place making is evident in the behavioral repertoires applied by people in transactional contexts. Placemaking as a phenomenon could benefit from further research to discover how to lift the context bound behavior categories to higher orders of abstraction so that greater inclusion could be achieved. This would assist in accounting for placemaking as a generalizable process across contexts and therefore account for greater variation in the behaviors of people. In this current study, placemaking is conceived of categories of behavior tied to context. It may be that the phenomenon is context bound. Research into identifying what particular behaviors contribute to the experience of sense of place would make the theory more useful in pragmatic terms.

A further opportunity for research exists in the field of developing a process for integrating placemaking into master planning and teacher operational plans with subsequent investigation of the impact of this process on the outcomes of schooling and teacher experience. Placemaking behaviors could be investigated for their impact on sense of place constructs; place attachment, place dependence and place identity. Initially, indicators of placemaking behavior could be developed as predictor variables. Measures of place attachment, identity and dependence already exist and could be modified for use in education contexts. The relationships between placemaking behavior, sense of place, attachment, identity and dependence could then be investigated psychometrically and qualitatively.

Finally, the historical focus of environmental psychology on investigating the impact of environmental factors on academic outcomes could be extended to include the impact of placemaking behavior on these and other outcomes of schooling. The subjective experience of connectedness and belonging to school has been demonstrated to be related not only to academic outcomes but behavioral and life outcomes as well (Bergin and Bergin, 2009; Catalano et al., 2004; Libbey, 2004; Ma, 2003). If connectedness and belonging could be demonstrated to have a positive relationship to placemaking behaviour the implications would be highly significant for stakeholders in the education enterprise.

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Appendicies

Appendix 1. Site and Participant Profile

Site	Profile	Participants	
School A	Approx. 190 students Prep to Year 7. Eleven full-time class teachers. Rural school situated 25km from Regional Centre of approx 90000 people.	P1 P2	<p>This teacher taught a prep-year 1 class with one other teacher in a shared space. Experienced teacher of over 20 years teaching across special education and early childhood areas mainly. Predominantly rural teaching experience.</p> <p>This teacher has over 20 years experience in primary school teaching. At the time of interview this study the teacher managed a single grade year 3 class in a two class, self contained, stand alone building detached from the rest of the school.</p>
School B	Rural school approx. 30km from Regional Centre of approx 90000 people. Student enrolment Approx 50 - P-7 Two class groups – P-3 and 4-7.	P3	<p>P3 was completing a full time teaching contract for 1 year. This teacher was a recent mature aged graduate having completed a Master of Education.</p> <p>Her classroom was situated in the original school building, a high set weather board structure also housing the staff room, reception area and Principal's office.</p>
School C	Rural school situated 142km from Regional Centre of approx. 90000 people. Enrolment approx. 360 P-7 classes Recent refurbishment of several classrooms for upper school. Refurbishment of ICT services ongoing. New Library in construction. New sports and general activities centre completed.	P4 P5 P6 P7 P8 P9	<p>P4 was an experienced primary school teacher with over 20 years of experience. Her experience included 5 years as a learning support teacher.</p> <p>This teacher occupied a double classroom refurbished space with P5. Approx 60 year 7 students were enrolled in this class.</p> <p>P5 was an experienced primary school teacher with over 20 years of experience.</p> <p>This teacher occupied a double classroom refurbished space with P4. Approx 60 year 7 students were enrolled in this class.</p> <p>P6 was an experienced teacher with over 20 years service. Year 6-7 class in refurbished teaching space.</p> <p>P7 was an experienced teacher in mid-career. Year 6/7 in refurbished teaching space. Had the same of group students from year 2 until the current year.</p> <p>P8 coordinated the special education program for the school and had established a special education unit. P3 was in the 3rd year of that role at time of interview. This teacher also provided specialist consultancy services to the other teachers on staff based on a model of inclusion.</p> <p>P9 was the principal of the school and had initiated the refurbishment of the teaching spaces, ICT services, Library, Sports Centre and grounds. I interviewed P9 on three occasions but did not include her interview data in the formation of the theory as she was not in a teaching role.</p>

School D	Rural school 60km from regional centre of approx. 90000 people. Near to main highway West of the State capital. P-7 classes with enrolment of approx. 600. Mixture of high set weather board buildings with demountable classrooms.	P10	<p>P10 was the only male participant. A teacher of over 20years experience in primary and health sport and physical education.</p> <p>P10 had been co-teaching with P11 in the same school for 12 years.</p> <p>P10 & 11 occupied a demountable (temporary) building with their year 6-7 class. These buildings are expected to be in service for up to 30 years, despite being temporary. They can typically accommodate two classroom spaces. P10 & P11 had made the space into a multi-zoned learning space to cater for a wide range of pedagogical options.</p>
		P11	<p>P11 was an experienced, (over 20years) primary and health sport and physical education teacher.</p> <p>P11 had been co-teaching with P10 in the same school for 12 years.</p>
School E	Rural P-7 school 45km from regional centre. Mixed high set original weather board buildings and low set demountable buildings. A new detached library had recently been completed.	P12	Mid career teacher. 30 students 6/7
		P13	Mid career teacher with experience in multiage primary school settings to year 7 and early childhood P-1.
		P14	Mid to late career teacher. Experienced upper primary school teacher. 25 students 6/7 students.
		P15	Early career teacher. Years 4/5 in multiage setting.
		P16	Mature age early career teacher. Years 1-2 class.