PROFESSIONAL DEVELOPMENT MAKING A DIFFERENCE FOR CHILDREN: CO-CONSTRUCTING UNDERSTANDINGS IN EARLY CHILDHOOD CENTRES

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Erratum

The following pages are bound out of order:

pp. ix and viii
pp. 3 & 4
pp. 56 & 57

ABSTRACT

This thesis reports an investigation of the ways in which teachers in four early childhood centres valued children's voices as the basis for developing authentic learning experiences with them. The purpose of the study was to support teachers as they identified the changes they needed to make in their programming in order first to hear and second to engage with and extend children's thinking. In the process of the research, teachers identified their current philosophies of learning and the evidence of this in their practices, with a view to working increasingly in sociocultural modes of interaction with and planning for children's understandings. Changes in three propositions related to children's and adults' development of understandings, around which this report is organised, also represent the changes in the teachers' thinking about children's learning.

Teachers in four case study centres were involved in reflecting critically on their practices, in progressively focused action research programmes. Through critical analysis of teacher-child dialogues, it became increasingly clear that the metaphor of scaffolding, as researched in the psychological literature, was an inadequate one to support these teachers in developing and maintaining intersubjectivity with children. A more adequate metaphor for the sharing and revisiting of ideas seemed to be that of co-construction. In order to hear and respond to the child's voice, as the foundation for developing intersubjectivity and co-constructing meanings, the teachers found they needed to work collaboratively with their community of learners.

A model representing levels of intersubjectivity was developed in response to the struggle to conceptualise similarities and differences between scaffolding and co-constructing learning. The model was useful in supporting understandings of the teacher's roles in planning for children's learning from a sociocultural perspective, through the development of ongoing and in-depth projects. The participant teachers' transformation of their own participation and some influences on these changes were further clarified as a diagram linking the personal, the interpersonal and the institutional/community planes of interaction.

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CERTIFICATE OF REGULATORY COMPLIANCE

This is to certify that the research carried out in the Doctoral Thesis entitled

Professional Development Making A Difference For Children: Co-Constructing Understandings In Early Childhood Centres

in the Department of Learning and Teaching, at Massey University, New Zealand:

(a) is the original work of the candidate, except as indicated by appropriate attribution in the text and/or in the acknowledgements;

(b) that the text, excluding appendices/annexes, does not exceed 100 000 words;

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CANDIDATE'S DECLARATION

This is to certify that the research carried out for my Doctoral thesis entitled **Professional development making a difference for children: Co-constructing understandings in early childhood centres** in the Department of Learning and Teaching, Massey University, Hokowhitu, New Zealand is my own work and that the thesis material has not been used in part or in whole for any other qualification.

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This is to certify that the research carried out for the Doctoral thesis entitled "*Professional development making a difference for children: Co-constructing understandings in early childhood centres*" was done by Barbara Jordan in the Department of Learning and Teaching, Massey University, Palmerston North, New Zealand. The thesis material has not been used in part or in whole for any other qualification, and I confirm that the candidate has pursued the course of study in accordance with the requirements of the Massey University regulations.

Supervisor's Name Professor Joy Cullen

Signature J. L. Cullen

Date 25 July 2003

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GLOSSARY

45:45	Expresses the number of children enrolled in public kindergarten morning and afternoon sessions, in this case 45 in each.
Core curriculum	Regular programme provided for children; includes routines and a range of activities.
Emergent curriculum	The programme of activities that develops in response to children's own interests and strengths.
ERO	The Education Review Office. A government organisation established under the 1989 education reforms with responsibility for reporting to the Ministry of Education on their reviews of schools and early childhood centres.
Encarta	Computer online encyclopaedia
Focus child	One of the children who are the current focus of the teaching team's planning. Each teacher was responsible for her whānau group (see below), from which she nominated one child for each planning cycle. The teaching team then made decisions about appropriate activities and projects planned to extend each focus child's interests and strengths, as ascertained through the team's observations and discussions with the parents of each child and with the children themselves.
NUDist	Non-numerical Unstructured Data Indexing Searching and Theorising. (Qualitative Solutions & Research, 1997). A computer package designed to help users handle non-numerical and unstructured data in qualitative analysis by supporting processes of indexing, searching and theorising. A NUDist project is the product of the researcher's knowledge and organisational and analytical skills. NUDist creates a powerful environment to store and explore data and ideas, to minimise clerical routine and maximise flexibility and to discover new ideas and

build on them. For further information and examples of the use of this programme in this research project, see Appendices C and D.

Playcentre	The Playcentre movement is a uniquely New Zealand early childhood parent co-operative that teaches and practices empowerment for both adults and children.
Portfolio	A folder or file for each child containing sample records of learning. Might include observations, teacher-child dialogues, records of projects, art work, photographs of activities. Maintained by Whānau teacher.
Private kindergarten	A sessional early childhood programme, registered under the childcare regulations with the Ministry of Education.
Process cooking	An area set up to provide children with maximum individual control in their cooking experiences. Equipment consists of storage units for materials and cooking utensils at child height, with choice of recipes and a display shelf for placing cards in order. Children follow instructions with support from adults; they make and cook one item, often in a microwave they programme with the aid of coloured dots; they then wash their dishes and leave everything tidy for the next child.
Project	An in-depth investigation of a topic worth learning more about. The investigation is usually undertaken by a small group of children within a class or group, sometimes by a whole group and occasionally by an individual child. The key feature of a project is that it is a research effort deliberately focused on finding answers to questions posed either by the children, the teacher, or the teachers and the children in collaboration (Katz, 1994).
Project board	A display area on which children and teachers collaborate to present the progress and some of the products of a project. This may consist of

information about the topic of investigation, artifacts that are products of this investigation and children's representations of their developing understandings about the topic. This is a dynamic display to which teachers and children frequently refer and contribute.

Public kindergarten — An early childhood centre, usually sessional (3 hours), provided under the auspices of the Aotearoa/New Zealand Free Kindergarten Association. In contrast to some private kindergartens, public kindergartens are not run for profit. In New Zealand, early childhood centres generally cater for children in the birth to 5 years range; public kindergartens cater for the 3-5 year olds. Children usually start public schooling after their 5th birthday.

Whānau — Literally, "family grouping". Often an early childhood centre groups children and teachers in smaller units, fostering closer relationships between teachers and children and between teachers and families. These units are sometimes called whānau, or roopu.

Whānau planning — The teacher of a whānau group maintained the portfolio records of the children in her group and was the main contact person with "her" children's families. Although planning for each child is ideally a collaborative exercise in the teaching team, the whānau teacher had the major responsibility for co-ordinating plans for the children in her whānau group. Each child would be the focus of planning for a period of weeks, during which the child would be especially encouraged to engage in an ongoing project from their own particular interests, or a new group project might emerge.

Whāriki — Māori word meaning a mat of woven threads. Because the New Zealand national early childhood curriculum document is called *Te Whāriki*, the word and the metaphor of a whāriki have become popular in early childhood terminology.

CHAPTER 1

BACKGROUND AND INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

Early in life, children learn who they are and how to learn through their interactions with people in their social environment. Early childhood teachers' beliefs about how best to support this learning are formed by a complex set of influences, including: their own life experiences within their culture, current practices of childrearing, the theories underpinning them and whether or not these theories are implicit or explicit to the teachers, their programmes of teacher education and professional development and the philosophies and practices of the people in their place of work (Anning, 1997).

Sociocultural theory is currently advocated by researchers and early childhood teacher educators as the most appropriate for supporting children's empowerment as learners in today's society (e.g., Berk & Winsler, 1995; Cadwell & Fyfe, 1997; Carr, May & Podmore, 1998; Cole, John-Steiner, Scribner & Souberman, 1978; Edwards, Gandini & Forman, 1994; Fleer, 1995a, b, 2001; Hedges, 2001; Helm & Katz, 2001; Hendrick, 1997; MacNaughton & Williams, 1998; Malaguzzi, 1993; Rinaldi, 1998; Rogoff, 1998; Tharp & Gallimore, 1988; Van Oers, 1999; Verba, 1994; Wells, 2000). However, several generations of current teachers have been strongly influenced by behaviourist and cognitive constructivist theories, which continue to guide their practices (Dahlberg, Moss & Pence, 1999).

This thesis reports the outcomes for teachers and children in four early childhood centres in New Zealand when the teachers sought to identify their foundational philosophies of learning and to improve their implementation of sociocultural theory. The initial interest of this research was specific both to teacher-child interactions and to how teachers scaffold children's learning, one of the complex concepts that have developed under the paradigm of sociocultural theory. Because interactions do not take place in isolation from the social milieu that constitutes an early childhood centre, this thesis identifies activities in the personal, the interpersonal and the institutional planes

(Rogoff, 1998) that contribute to appropriate teacher-child interactions that empower children to be competent meaning-makers. The teachers were supported in their implementation of the new theoretical paradigm through programmes of facilitated action research, which is equated here with co-constructed research.

Initial questions

The questions central to this study, at its commencement, were:

1. *How is children's learning being scaffolded in early childhood centres?* and
2. *What content knowledge and professional development processes support staff teams as they learn to scaffold children's learning?*

Through the process of the research, the focus of these questions shifted from teachers scaffolding children's learning, to teachers, children and parents/whānau together co-constructing understandings in their communities of learning, across time and across distance. How such a major shift occurred is one of the subtexts of this research report.

Addressing these questions involved my working as the facilitator of a successively focusing action research programme in each of four case study centres. Through observation and the analysis of their own dialogues with children, each of four teams of teachers addressed the question of how they were scaffolding children's learning at the start of the programme. In collaboration with other members of their teaching team, each teacher initially chose to investigate further what changes they could make in their processes of recording and planning for children's learning in order first to hear and secondly to engage with and extend, children's thinking.

1.2 MY PERSONAL BIASES AS A RESEARCHER

In keeping with Cannella's (1997) discussion of research as being subjective, from the selection of literature to support the researcher's biases, to the completion of the project, I state at the outset my own biases as they relate to children's learning and to research about learning. Researchers such as Ethell (1998a, b), Ethell and McMeniman (2000), Hawthorne (1994) and Pajares (1992) have identified the importance of teachers being able to identify the influence of personal backgrounds on philosophy, in the interests

My work as a professional development facilitator with local early childhood centres and in national forums, has enabled me to remain aware of the progress of centres in adopting the sociocultural paradigm and to influence this progress; reciprocally, my thinking has been strongly influenced by the teachers' work. My presentation of this thesis is thus an example of what Vygotsky (1926/1997) would call a socio-historically-constructed assignment. Wertsch (1991) would say that many voices are present in my work and I am aware of many of these influences in my "community of learners" (Palinscar, Brown & Campione, 1993).

1.3 SOCIOCULTURAL FOUNDATIONS

Vygotsky's (1926) sociocultural theory is the theoretical model currently underpinning both my professional work as a teacher in a College of Education and my study and research. Central to this work is the role of teacher-child dialogue, in developing intersubjectivity between children and teachers (Wells, 2001). It is through constructing a joint understanding of the topic of discussion that the teacher and children gather clues to each other's thinking, which is the basis of co-construction of learning in small groups of children and teachers (Valsiner, 1988; Verba, 1994). Through ever-evolving shared understandings of the topic, the teaching team and the children together co-construct extended and linked activities, which frequently develop into projects (Helm & Katz, 2001). Engagement in child-initiated projects encourages teachers and children to return repeatedly to the same interests at ever deepening and widening levels of understanding and exploration (Carr, 2001), hence involving higher cognitive processes.

The early childhood sector in New Zealand has enthusiastically adopted its first national curriculum document, *Te Whāriki* (Ministry of Education, 1996), as a framework for curriculum implementation. The principles of empowerment (whakamana), holistic development (kotahitanga), family and community (whānau tangata) and relationships (ngā hononga), demonstrate the document's sociocultural foundations. The strands, goals and learning outcomes developed from these principles are further indication of the expectations that learning for this age group (birth to 5, in New Zealand) will be largely child-initiated and process-oriented and aimed at developing children who see themselves as capable learners. However, as Cullen (1996) has identified, in the absence of a firm understanding of the philosophy underpinning *Te Whāriki*, the document alone

both of countering any potential biases, and in supporting a clear articulation of philosophy as the basis of practices. Stipek and Byler (1997) and Gardner (1996) found a significant correlation between teachers' espoused beliefs and the practices implemented in their preschool and kindergarten classrooms, though Bell (1990) found less of a match between what teachers said they did and what they were observed to be doing in practice. In my study, the teachers and I moved constantly between observing practices and identifying the underpinning beliefs that produced them, in attempts to support the development of practices and processes that better supported teachers' newly articulated beliefs. In the co-construction of both my research and the teachers' action research on their practices, we constantly examined our own biases, using Smyth's (1991) four moments of reflection: description, information, confrontation and transformation.

My biases towards sociocultural philosophies of learning have been shaped by my life experiences in everyday life and in my teacher education as both a secondary mathematics and science teacher and as an early childhood educator. My own family's early childhood experiences in Playcentre (see Glossary) were instrumental in shaping my beliefs about children as powerful people. During the last decade of my professional and academic career in a College of Education, sociocultural theory seems to have become the accepted umbrella paradigm for learning, at least amongst the groups of early years professionals with whom I relate. Contributions to the early childhood sector's understanding of sociocultural theory include literature reviews (Rogoff, 1998), conference presentations (Jordan & Collins, 1995; Nally, 1995), programmes of research (Foote, Turnbull, Coutts, & Stevens, 1995) and publications during the time of my work in the centres reported in this thesis (e.g., Cannella, 1997; Dockett & Fleer, 1999; Fleer, 1995a,b, 1996; Goncu, 1999; Graue & Walsh, 1998; Hendrick, 1997; McNaughton, 1995; MacNaughton & Williams, 1998; Meade, 1995a,b,c; Smith, 1995). The field of early childhood is progressively coming to terms with what the adoption of sociocultural theory might mean in practice, for children and for adults. Smith (1996) made an especially relevant contribution to the consideration of sociocultural theory in the context of the curriculum of New Zealand early childhood centres, advocating a focus on "educare" and the development of pedagogical principles that would lead teachers away from developmentalism and towards a sound understanding of sociocultural theory in practice.

is insufficient to ensure the implementation of sociocultural theory in centre practices. Collins (1996) and more recently Hatherly (1999) have found evidence that some centres use *Te Whāriki* to justify a wide range of practices, without the necessary reflection based on clear philosophy, leading to change and improvement in outcomes for children. Gardner (1996) found "many studies which have reviewed early childhood practices rue the fact that, while there may be commonality of language amongst practitioners, it is not reflected in consistency in practice between teachers" (p.47). This study provided opportunities for teachers to articulate their practices and the beliefs underpinning these and to develop a commonality of language and understanding about sociocultural terminology.

Teachers have always had available to them a range of interaction strategies in supporting children's learning, expressed by Bredekamp and Rosegrant (1995) as a continuum from directive to mediational to non-directive. Increasingly the language of sociocultural theory is being incorporated into the field of early childhood in New Zealand. However, using a new language does not necessarily result in changed practices and improved outcomes for children in centres and McNaughton (1996) has found "examples where theoretical models of teaching/learning can be applied to just about any educational practice" (p.190). Definitions and models are themselves insufficient to lead to change, which will take place only when teachers believe in its imperative through examination of their own beliefs and practices (Brazee & Capelluti, 1993; Van Oers, 1999). Kohlberg, La Crosse and Ricks (1972) categorised educational ideologies under the three broad descriptors of romanticism, cultural transmission and progressive education. All three ideologies have been found to be currently at work, even in a centre that professes to use *Te Whāriki* in its planning and assessment procedures. This indicates that *Te Whāriki* is able to be invoked in support of an eclectic mix of philosophies and practices in early childhood in New Zealand (Nuttall, 2001). To effect change, especially in their basic philosophy of learning, teachers generally benefit from support in identifying what it is they are currently doing, the thinking these actions are based on and in assessing this alongside the new ways of doing things that are under consideration.

Each of the four case study centres involved in my research had previously been involved in programmes of professional development in support of their implementation

of *Te Whāriki*. These four centres demonstrated a wide range of practices and each claimed their programme adhered to the principles of *Te Whāriki*. However, the teachers and I discovered that none of us had a clear understanding of sociocultural theory in practice, at the outset of our research. All the teachers who engaged with me in investigating their interactions with children made some changes towards a more sociocultural foundation to these interactions and also to their programming processes.

1.4 HEARING CHILDREN'S VOICES

Children's voices in New Zealand, as in other Western countries, continue to be largely ignored (Canella, 1997; Kontos & Wilcox-Herzog, 1997), especially as children are viewed as the "property" of the family (Smith, Taylor & Gollop, 2000). Dockett and Fleer (1999) discuss the differences in empowerment of children in Western families, where they have very little opportunity for decision-making power and for Aboriginal children who are expected to be autonomous and to make their own decisions. Children in Western families are expected to remain naïve and immature (Canella, 1997) and to accept the education offered to them with little input of their own, as under either the skills-based or the free play (child-centred) models of teaching (Dahlberg, Moss & Pence, 1999). Teachers and educators who have gained experience in listening to children's ideas and written about this research as it has progressed* are constantly amazed at these children's understandings and at how much they are able to contribute to each other's learning and to that of adults. The renowned Italian Reggio Emilia preschools express the link between their image of the child and their understandings of the potential and the rights of children, as a "fundamental principle" that guides their practices. As expressed by Rinaldi (2001):

> One of the fundamental points of the Reggio philosophy is an image of the child who experiences the world, who feels a part of the world right from birth; a child who is full of curiosities, full of a desire to live; a child who is full of a desire and ability to communicate from the start of his or her life; a child who is fully able to create maps for his or her personal, social, cognitive, affective and symbolic orientation. Because of all this, a young

* The article written by the teachers is not referenced in this report. Any serious researcher is invited to contact the author for access to the reference.

child reacts with a competent system of abilities, learning strategies and ways of organising relationships (pp.50-51).

In this thesis, the focus for the scaffolding and co-construction of understandings is the activity of dialogue between teachers and children. Contributions to such dialogues from the environment are considered from the perspectives of planes of activity. Rogoff (1998) developed the roles of "planes of activity" as lenses that allow a focus on one aspect of the activity, while holding other planes as background lenses to the current focus lens, and Fleer (2001) more recently explored the idea of these planes in relation to assessment in early childhood settings. Further, the concepts of a "community of learners" (Palinscar, Brown & Campione, 1993), or a "community of practice" (Rogoff, 1995; Wenger, 1998), incorporate the contributions to meaning-making of interactions between people and between people and artifacts, on several planes of activity and across space and time.

The major methodology of this research is facilitated action research in four case study centres. The study makes specific links between the literature on teachers and children together co-constructing understandings and adults in various roles similarly co-constructing their understandings concerning children's learning.

1.5 PILOT AND PROPOSITIONS

A pilot study allowed me to proceed with the subsequent programmes of professional development in the four case study centres, confident that the teachers who self-selected into these programmes would have the potential to engage in sufficient dialogue with children for analysis of their teacher-child interactions. This confidence was a necessary antidote to my expectations from my reading of the literature and from informal discussions with colleagues, each of which predicted little verbal interaction between children and teachers. My own experiences with teaching teams in the region however, had led me to believe I would find sufficient evidence of teachers scaffolding children's learning to answer the questions posed at the beginning of this chapter.

By the completion of the pilot study, I was aware of the huge amount of data that would be generated in four case study centres. To deal with this data productively, I rewrote

the research questions as propositions. The use of propositions is further discussed in Chapter Four. Following the pilot study and throughout my engagement with the first of four case study centres, the three propositions were:

Initial propositions

Proposition one:

> Teachers scaffolding children's learning require the use of many interaction skills.

Proposition two:

> Scaffolding learning for children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Proposition three:

> Facilitator-teacher co-construction of research is effective professional development; with such critical reflection, a change in philosophy can either lead or follow a change in interactions with children.

In each of the four case study centres I engaged with the teachers as they continued with their normal procedures of planning for large- and small-group activities based on their observations and knowledge of individual children's interests and strengths. Each teaching team remained in control of its own programme of professional development. The only common element for the four case study centres was that each team had chosen to work with me on the topic of developing their programme with children in support of children's thinking, through their dialogues with them. Each centre has contributed in a major way both to the teachers' and my own understandings of sociocultural theory in practice, and different aspects of the work of each is reported.

A model depicting various levels of intersubjectivity evolved as I struggled to conceptualise the range of skills and processes that contributed to the teachers' interactions with children. As a result, by the end of my data generation, my focus had shifted from how the teachers scaffolded children learning for them to how they co-

constructed learning with them. Thus the questions to which this thesis seeks to provide some answers and the propositions developed to provide answers became:

Revised questions

1. *How is children's learning co-constructed in early childhood centres?*
2. *What content knowledge and professional development (PD) processes support staff teams as they learn to co-construct children's learning?*

Revised propositions

Proposition one:

> Teachers and children co-constructing learning require the use of many interaction skills.

Proposition two:

> Co-constructing learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Proposition three (unchanged):

> Facilitator-teacher co-construction of research is effective professional development; with such critical reflection, a change in philosophy can either lead or follow a change in interactions with children.

1.6 OVERVIEW OF THESIS CHAPTER STRUCTURE

Chapter One has introduced sources of my interest in facilitated action research as a framework of intervention for the improvement of teacher-child interaction; intervention that remains in the control of teachers, as the principal researchers of their own programmes of learning for young children. The thesis continues in the following order of presentation. Chapters Two and Three debate theoretical underpinnings of empowerment for children and teachers under the sociocultural paradigm of Vygotsky and more recent neo-Vygotskians such as Wertsch (1991), Rogoff (1998) and Fleer

(2001). A pilot study leading to the research propositions is reported in Chapter Four and Chapters Five and Six provide the results of their programmes of action research of the four case study centre teams. These results are synthesised in Chapter Seven through two models, each relating outcomes across three planes of activity. Conclusions and recommendations for practices in the early childhood field and for further research complete the thesis in Chapter Eight.

CHAPTER 2

ENHANCING TEACHER-CHILD INTERACTIONS THAT SUPPORT THE CO-CONSTRUCTION OF LEARNING: REVIEW OF RELATED LITERATURE

"Neither the naked hand nor the understanding left to itself can effect much. It is by instruments and aids that the work is done" (Bacon, *Novum Organum*, 1623/1960, p.39, in Leont'ev, 1978, p.17).

2.1 INTRODUCTION

Teacher-child interactions are the outcomes of the complex sets of structures and processes that contribute to the community of the early childhood institution. Optimal interactions require clearly articulated philosophies of learning on which policies and practices that support teacher-child dialogues are developed. While the central focus of this review relates to teacher-child dialogues, the complexities of the milieu that contribute to these interactions are also explored, beginning with a discussion of the influences of underpinning philosophies of learning.

Sociocultural theory is currently a strong foundation of early childhood and school curriculum documents in New Zealand. However, the fundamental differences in interactions advocated by this theory compared with interactions in theories commonly held by those in the teaching profession seem yet to be understood by many teachers. Vygotsky (1926/1997), the founder of sociocultural theory, was not precise in his descriptions of implications for interactions of his theory and as Rogoff (1998) identified, more recent advocates for its implementation provide sometimes confusing and contradictory possibilities. Specific to the current study are the definitions of "scaffolding" and of "co-construction", two concepts of interactions within the sociocultural paradigm that provide quite different metaphors for teachers' work with children. In the process of this study, a clarification of scaffolding and co-construction, in theory and in practice, became important for teachers' analysis of their interactions with children.

2.2 THEORETICAL DISCOURSES INFORMING THE INTERNATIONAL EARLY CHILDHOOD COMMUNITY

The dominant theoretical discourses informing early childhood in the latter decades of the twentieth century were those variously labelled scientific, positivist, modern or constructivist. As the new science of psychology, the science of human behaviour, struggled to gain acceptance as a science at the beginning of the 20th century, it adopted scientific premises and methods of knowledge and of research about that knowledge. These premises included a belief that there is a world that can be known and that this knowledge can be controlled and improved for the benefit of all. The theory of behaviourism, which relies on explicit reward or punishment for teaching children the behavioural expectations of their adults, was developed in finite detail; what happened inside the child's head was considered irrelevant to their learning. Schedules of reinforcement, timing and degree of reward and punishment were carefully researched in animals and in humans, and environmental conditions were considered paramount for learning (Bijou & Baer, 1965; Skinner, 1979; Watson & Rayner, 1920).

Behavioural theory supports the traditional system of schooling that is steeped in direct-transmission approaches. Countering behaviourism's strict control of the child's environment and its lack of interest in what takes place inside the child's head, constructivist theories emphasise each learner's unique construction of ideas. Piaget (Piaget & Inhelder, 1973), set the scene in the era of constructivism, with his methods of observation and identification of children's stages of development, outlining what to expect as "normal development" and how to enhance children's development. In the 1960s, child development, an offshoot of developmental psychology, became the cornerstone of early childhood theory and practice. Working in the child development paradigm, Piaget became extremely influential in education. He viewed the teacher's roles as multiple; as evaluator, organiser, stimulator and collaborator (De Vries & Kohlberg, 1990). The first three roles became dominant in early childhood with teachers largely setting the environment for children's engagement and then standing back to supervise as the children developed at their own pace. Learning in such a free play programme was considered to be an individual process of knowledge construction, through the mental processes of assimilation and accommodation, in response to children's active participation with real objects. Adult intervention was believed to be

an intrusion that would hinder the child's learning and understanding. Early childhood programmes were based on what became known as "developmentally appropriate practice" (Bredekamp & Rosegrant, 1995).

In contrast to direct transmission approaches to learning, both cognitive and social constructivism view children as active in constructing their own knowledge and in problem-solving; both approaches expect teaching to begin with the child's current understandings of the concepts to be learned. The difference between the two constructivist approaches, the cognitive and the social, is in their understanding of what active construction means (Marshall, 1996) and in the understanding of the knowledge base children are expected to acquire. The cognitive constructivist perspective on knowledge is, in general, that knowledge is relatively absolute and unchangeable, separate from the child and existing independently of culture, society or institution. In this paradigm, there is a set of facts children are expected to acquire and these facts are set out in a logical order of learning with tightly formulated learning outcomes. In contrast, in the social constructivist paradigm, children are supported in constructing their own meanings and understandings before exposure to the "scientific" ones. Both children and teachers engage with each others' ideas, each developing theories and hypotheses in an atmosphere of mutual respect and knowledge-sharing (Dahlberg, Moss & Pence, 1999; Popkewitz, 1993; Taguchi, 1997).

"Schema theory" (Athey, 1990; Meade, 1995b; Nutbrown, 1994) linked Piaget's cognitive constructivist theory with Vygotsky's social constructivism by encouraging teachers to engage with children's thinking, in the context of their play with other children. Piaget used the term "schema" to describe cognitive structures that individuals develop to internalise patterns of thinking in response to experiences in their environment. "All organisms exhibit behaviour that implies inner structure" (Athey, 1990, p.35), actively searching for things to see and generally finding what they expect to see. "Schemas of action are co-ordinated systems of movements and perceptions, which constitute any elementary behaviour capable of being repeated and applied to new situation" (Piaget & Inhelder, 1973, p.382). More recently a schema has come to mean a "pattern of action as well as a pattern for action" (Neisser, 1976, p.56), as actions become linked to each other in the development of skilled and economical performance. Meade (1995b) concluded that the improved performances of ten children

in the pilot for the Competent Children Project (Hendricks, Meade & Wylie, 1993) were related to the focus of both teachers and the children's parents on their thinking patterns and on teacher-child interactions. However, Meade also found a "paucity of discussions and conversations between teachers and children... Children's working theories were seldom advanced by discussion" (Meade, 1995b, p.67). All the teachers in the current case study teams had been reinforced in their application of schema theory to their observations of children, in their previous programmes of professional development. Teachers referred to schema in their planning for children and worked with lists of various types of schema that had been identified as common in young children (Athey, 1990; Meade, 1995b; Nutbrown, 1994) in their observations of children's interests.

The early childhood curriculum is such that teachers generally have a great deal of freedom in their programme emphasis. Despite increasing acknowledgement of sociocultural theory, current early childhood practices in support of learning are generally based on the developmental model, favouring non-directive provision of equipment and activities interspersed with teacher-directed group activities. The assumptions on which these programmes are based are that children learn at their own rates and do so best without adult interference. This model has been described as "the early childhood error" (Bredekamp & Rosegrant, 1992, p.3). Also evident in early childhood centres, though emanating from an entirely different philosophical base, are programmes, or parts of programmes, based on the schooling, or transmission model, in what Stipek and Byler (1997) call the skills-based approach to programming. In this latter model, children learn through teacher-directed sequences of learning in didactic programmes, often reinforced with the completion of worksheets to practise skills. Bredekamp & Rosegrant (1992, p.3) describe this model as the "elementary error". Subscription to such "school-type" programmes in early childhood is based on the belief that the best preparation for children's later success in school is an early introduction to the formal activities characteristic of primary classrooms. Though the field of early childhood, through research and theory, has generally been proactive in resisting the downward spiral of the learning and assessment practices of the direct teaching/skills-based approach to education, pressure continues from several sources to capitalise, via a cognitive approach, on very young children's enthusiasm for learning.

The real issue between how we teach under Piaget and how we teach under Vygotsky is how we view the "truth" or "knowledge". Dahlberg, Moss and Pence (1999) ask teachers to consider the following questions. What is it that we think our children should be learning in their early years? Is there a definitive truth out there to be known, knowledge to be gained and measured, especially in comparison with established "norms of development"? How do we view the child: as a *tabula rasa* or empty slate to be filled; as an innocent, to be protected especially against their own impulses while they live in their own golden age; as knowledge, identity and culture producers, to be prepared for school, ready to make the most of compulsory schooling; as the young child of nature or the scientific child of biological stages; or as a labour market supply factor? A teacher's image of the child is the foundation on which is developed a philosophy of learning and the practices to support this learning (Stipek & Byler, 1997; Warham, 1993).

2.2.1 Sociocultural theory

In rejecting the behaviourist explanations as the only "laws" necessary to explain the ontogenesis of thinking, Vygotsky agreed with Piaget in adopting a dialectic approach that included both the environment and the unfolding of the biological organism as important features. However, Vygotsky did not focus on stages of development and placed much more emphasis on young children's learning within their social and cultural life, mediated by adults and more experienced peers as they come to internalise understandings.

The Zone of Proximal Development

Vygotsky introduced the notion of the "zone of proximal development" in an effort to deal with the two problems of assessment of children's intellectual abilities and the evaluation of instructional practices. The zone of proximal development represents the distance between a child's "actual developmental level as determined by independent problem-solving and the higher level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Wertsch, 1985a, p.68). One of Vygotsky's major reasons for introducing the concept of the zone of proximal development was that it allowed him to examine those "functions that have not yet matured but are in the process of maturation, functions that will mature

tomorrow but are currently in an embryonic state. These functions could be termed the "buds or flowers of development" rather than the "fruits of development" (Vygotsky, in Cole, John-Steiner, Scribner & Souberman, 1978, p.86). Vygotsky believed that the measurement of the child's potential was a much more useful construct than the non-cued, individual assessment of the child's current understandings, which informs teachers who use skills-based teaching. The zone of proximal development "is a way of describing an activity in which someone with greater expertise assists someone else to participate in sociocultural activities in a way that exceeds what they could do otherwise" (Rogoff, 1998, p.699).

Intersubjectivity

One of the principles of working with children within their zones of proximal development is the maintenance of intersubjectivity between participants. "Underlying interaction within the ZPD is intersubjectivity, the process of constructing and reconstructing joint purposes between the child and his/her interacting partner" (Rogoff, 1998, p.429). Verba (1994) described intersubjectivity as the participants' belief that they are jointly attending to the same aspect of the situation in which they are involved. Through negotiating with peers, children learn that others may not share their view, and how skilfully they negotiate has implications for their popularity and their identity formation. Children have been found to use different skills of negotiation with their peers than they do with adults (Verba, 1994) and certainly children benefit from opportunities of free play in which they make their own decisions and solve their own problems and conflicts. I will argue that, when teachers share their power with children, in an atmosphere of co-constructive learning, children are empowered to use their skills of negotiation and planning with adults as well as with their peers.

Lindfors (1999), believing power is a real issue in any classroom, in fact, in any human interaction and especially during inquiry dialogue in the classroom, asked the following questions related to the use of power in the classroom:

> Whose purposes? Whose expressive ways? Whose content? Whose stance? Who has the right to decide what shall participants talk about? Whose agenda is to be honoured? Whose knowledge is relevant? Whose is central?

> And who has the right to set the tone, the way of turning towards the topic and towards each other? (p.154)

Davies (1990) would describe teacher-child interactions as being discursively constituted, with both the adults and the children fulfilling their consigned roles without conscious choice. It is important that teachers do intervene appropriately in children's play to encourage cognitive gain from their experiences of intersubjectivity. Verba's (1994) research indicated children are able to develop intersubjectivity between each other with very little verbal communication as they "share meanings and achieve interpersonal coordination of actions in social play" (p.127) and at a very early age.

In the engaging in "effort after shared meaning" (Valsiner, 1988, p.119), the role of the adult in supporting children's developing higher mental functioning,o r as a more expert peer supporting other adults' learning, is a crucial one. The major task for adults in maintaining intersubjectivity is to remain in touch with the learners' understandings within the zone of proximal development. Intersubjectivity also implies that both (or all) parties in a discussion develop a shared meaning, each contributing from their own knowledge and experiential base (Goncu, 1993; Rogoff 1998; Rommetveit, 1985; Verdonik, 1988). The development of intersubjectivity means each participant understands and adjusts actions to what the others are saying and each learns from the other. This process of developing a joint understanding between participants is quite different from Piaget's conception of two minds meeting, each using the ideas of the other to advance her or his own ideas. Rogoff (1998) described Piagetian processes, as involving decentering, or perspective taking, "which are individual processes working on socially provided information" (p.685). In Piagetian terms, the social exchange provides an opportunity for individuals to explore their own ideas, to clarify and test them through hearing them spoken and perhaps by being challenged by others. In contrast, Vygotsky's followers argue that collaboration is more conducive of learning and that participants each contribute to the understandings being developed (Azmitia, 1988).

Research has found that, while children's collaborative abilities and processes develop, their strategies of developing intersubjectivity remain constant (Brownell & Carriger, 1991; Goncu, 1993; Verba, 1994). Goncu (1993) found, when studying the play of 3-

and 4-and-a-half-year-olds, that intersubjectivity is developed and maintained in several ways. These included responding to extensions with extensions, as when children extend their partners' ideas, which were extensions of their own, and through introductions or acceptances rather than with a message of disagreement or an irrelevant act. Evidence that even babies of nine months are aware of cognitive contradictions, are able to develop intersubjectivity and to predict behaviour and collaborate, is seen in their "tricking" during games such as peek-a-boo. Verba (1994) found infant interactions indicated the presence of collaboration. Infants are able to transform their activities in relation to others' actions and interventions and even engage in an elementary form of tutoring (Verba, 1994). Researchers such as Brownell and Carriger (1991) and Verba, (1994) found children of 13 months to four years share meanings through inferential processes of looking at one another, smiling, vocalising and gesturing, which provide some understandings of intentions. In a laboratory study of unfamiliar pairs of toddlers engaged in collaborative problem-solving, Brownell and Carriger (1991) found that compared with younger children of 12, 18 or 24 months, 30-month-old toddlers collaborated more and seemed to possess a mutual awareness of their peers' behaviour in relation to the goal, and their efforts were in part conditional on their recognition of one another's joint relationship to the outcome (intersubjectivity). Even from birth, babies demonstrate a primordial intersubjectivity, in being active stimulus seekers and already oriented in one way or another towards the world and towards others (Crossley, 1996). In their later social play, intersubjectivity becomes more visible, even in the absence of verbalisation, as children understand play themes such as rough and tumble as being different from aggression, and jointly interpret play actions as pretence in contrast to reality (Goncu, 1993; Howes, 1998). The co-construction of learning between teachers and children taps into children's well-developed skills of maintaining intersubjectivity, the sophistication of which many teachers seem unaware.

In developing intersubjectivity, or shared meaning, it is not essential that partners make an equal contribution. Exchanges will not always "resemble smooth and fair turn taking between partners of equal status engaged on the same topic" (Rogoff, 1998, p.723). The processes of collaboration and intersubjectivity will occur to varying degrees, even when the balance of power is uneven between the participants. At times one partner will take the greater responsibility for initiating and maintaining the dialogue, with leading,

following, actively observing and supporting, each being roles that may or may not be evenly distributed amongst the participants. When young children are playing, intersubjectivity is seen to be constantly changing "as a result of continuous knowledge exchange between the children" (Goncu, 1993, p.101). In the current study, teachers demonstrate skills of maintaining intersubjectivity as they mediate in children's understandings.

While becoming aware of their peers' perspectives and gaining ability to acknowledge their own perspectives through dialogue, children are also developing their understanding of how their minds work, or what has become known as their "theory of mind", through researchers such as Dockett (1995); Moses and Chandler (1992) and Wellman and Gelman (1992). All interactions between people are premised on our understanding of others' mental states, of "perception, beliefs, desires, feelings and intentions" (Dockett, 1998, p.57). Researchers have found children need a theory of mind to be able to relate to one another's ideas (Dockett, 1998); that there are connections between children's abilities to distinguish between aggression and rough and tumble play during their pretend play and their developing theories of mind (Goncu, 1993); and that experiences of negotiating ideas and taking into account others' perceptions leads to a greater tendency to engage in dialogue with peers (Goncu, 1993). Thus, according to a theory of mind perspective, the development of intersubjectivity requires children also to develop a theory of how the mind works. One of the centre teams in this study became especially interested in children's theory of mind and investigated children's thinking and ideas about where they thought their own thinking arose (see Haven Centre, p.182).

Activity theory

Vygotsky chose Bacon's quote that heads this chapter, as his guiding metaphor, indicating his intention to incorporate Marxist theory of labour activity into his psychological theory. These ideas continue to be developed today, under the title of activity theory (Leont'ev, 1978; Moll, 1990; Wertsch, 1985a). Vygotsky envisaged two levels of mind and two corresponding levels of physical activity: the first or natural level was the mind alone (the naked hand), the second, or cultural level, was the mind armed with tools acting as mediators for culture and history. The links between the

natural and the cultural are that the cultural **is** the natural "mediated by unique mental tools and auxiliary means" (Leont'ev, 1978, p.17). Here also is the link between the lower and the higher mental functions and between natural and scientific concepts, in that the higher mental functions are mediated by the use of psychological tools. Leont'ev believed the unique contribution of Vygotsky was his hypothesis of the mediation of mental processes through tools (Leont'ev, 1978, p.19).

In non-mediated learning, children interact directly with the environment, for example, in the form of observational learning, in what we would call trial and error, or free play. Mediated learning radically changes the conditions for interacting. Vygotsky and his followers (Kozulin, 1998; Vygotsky, 1978a,b, 1986; Vygotsky & Luria, 1993) identified three types of mediating agents: material tools, psychological tools and other human beings, all of which work to bridge the gap between the learner's environment and her or his appropriating these sociocultural ways of knowing and behaving. Material tools do not exist as isolated, individual implements, but as objects with collectively understood use, interpersonal communication and symbolic representation. Clearly, the use of material tools influences human cognition and Dockett and Fleer (1999) have advocated that early childhood centres be careful to assess their current provisions of equipment for children for relevance in today's society. However, it is the psychological tools that play a more dominant role in cognition because they bridge the stimuli of the world and the individual's inner psychological processes (Kozulin, 1998). It is with the "psychological tools" teachers use to support children's learning that this project is especially concerned. The contents of each teacher's "tool-kit" demonstrates her or his specific commitment to beliefs about learning, and her or his articulation of practices and beliefs is the first step towards changing these beliefs.

In activity, the use of psychological tools is analogous to tools in physical labour, determining a person's relationship with the environment and with himself or herself. Examples of Vygotsky's psychological tools are the spoken language, systems of notation, works of art, written language, schemata, diagrams, maps and drawings. Shared and collective tool use is a major way in which children both come to be socialised into their society, to appropriate signs and concepts for themselves, and to pass this learning on to the next generation. Where children are separated from the rest of society in institutions catering specifically for them, the equipment and routines

provided, which are themselves cultural and historical developments, play a major role in what and how children learn. Early childhood centres are such institutions and as such they do play a major role in how children are prepared for their roles in society. It is difficult to justify the organisation of children spending large parts of their days divorced from their real world, yet expected to learn to use the tools of their cultures, when the major paradigm of learning is skills-based. A contention in this dissertation is that adults have a responsibility to construct programmes of learning in early childhood institutions that as nearly as possible approximate selected activities of the real world of children's homes and communities, and provide links between the various facets of children's communities.

The third class of mediating agent, people, is of central interest in this study. According to Kozulin, (1998) in Vygotskian research, the role of the human mediator has often been reduced to that of a "mere provider of symbolic tools to the child" (p.4). This quote could be used as a direct reference to the common early childhood practices of "free play", during which adults leave the children to complete their own investigations within a well-equipped environment. Since the process of children's learning has been shown to have as large an influence on the child as the content of that learning (Vygotsky, 1978b; Wells, 2000), it is essential teachers do not abdicate from their important role as mediators for children of cultural understandings, and as the "senior semiotician" (Vygotsky, 1926). Teacher-child interactions appropriate in this mediation of children's learning were identified during this research.

The development of learning is "perceived not as a natural process of maturation and the acquisition of new information, but rather as an increasing ability to apply new cultural tools to one's own psychological processes" (Kozulin, 1998, p.69). Rogoff (1998) expresses this idea in her description of cognition as a collaborative process and learning as transformation in participation. Here learning is viewed as an expression of the learner's behaving differently in one situation because of previous appropriation of cultural tools.

Rogoff (1998) described individual learning as occurring "in collaboration with a community of thinkers in which more than one person is working on a particular problem, with historical and material aspects of other people's solutions available to

each thinker in their extended conversation" (p.726). A baby born into our culture does not merely respond to stimuli, acquire socially determined skills and knowledge and adapt to the determining environment. The uniqueness of being human is that each of us, through our activity in the world, changes the very circumstances that determined us. An example provided by Vygotsky (1981) of others mediating young children's learning is that of a baby using the natural instinct to grasp at objects becoming transformed into a gesture of waving goodbye. Through the mediation of another individual, cultural meaning is given to gesture, which later becomes internalised and provides the child with inner commands to him- or her-self. Thus development is both the tool and the result of developmental activity, "...only through the other do we become ourselves; this rule applies to psychological function as well as to the personality as a whole" (Vygotsky, 1981, p.144).

Activity as the unit of analysis in sociocultural theory

One of Vygotsky's legacies to the study of cognition is the basic concept of the use of a unit of activity for analysis. In moving away from the narrow psychological and individual measures of learning, such as "skills, concepts, information-processing units, reflexes or mental functions" (Wertsch, 1985a, p.199), a new unit of analysis was required. This unit needed to be consistent with Vygotsky's notions of the interplay of all the personal, social, cultural, political and historical influences on learning. Individual action develops out of the context of the social setting, or "activity setting" and the meanings created within the social milieu are inseparable from the social interactions that formed them. In this view, cognition is not perceived as residing in an individual's head, but as being "distributed" in the activity setting in which it developed. Distributed cognition is an understanding of thinking as "not reducible to individual properties or traits...instead it is always mediated, distributed among persons, artifacts of the culture, including, most prominently, the verbal and written interactions with other human beings" (Moll, 2000, p.265).

Activity theory allows consideration of a multitude of influences on an individual's mental processes. Where Vygotsky attended especially to social influences on thinking, others, such as Leont'ev (1978), Rogoff (1997, 1998) and Wertsch (1985a), extended the sphere to include institutional influences. Of interest here are the differing outcomes

for children's learning of differing adult motives for the same activity. Wertsch, Minick and Arns (1984) examined Brazilian adult-child dyads, half of which consisted of mother-child and the other half of teacher-child, each with the task of constructing a copy of a model farmyard. They found two distinct patterns in the operational aspects of interactions in the dyads, analysing their results in terms of the adult's perception of the setting as either a labour-activity setting or an instructional-activity setting. In a labour-activity setting, the guiding assumptions are productivity and lack of wasted time and energy; in an instructional activity, on the other hand, the motive is to allow students to learn as much as possible and this often involves allowing mistakes, from which learning accrues. For the Brazilian mothers, the highest priority was efficient and error-free completion of the task in which interactions allowed children to carry out only those tasks that they could complete readily and flawlessly. The teachers held quite different assumptions about the activity, allowing the children much more responsibility in all aspects of the task, even if they made mistakes. The researchers also related the differing expectations of the adult groups to their definition of the activity setting because of their previous experiences in institutions; the mothers had attended school for no more than four years, compared with the teachers' minimum of 11 years, so they understandably had differing assumptions about the activity, as either instructional or labour. Each carried out the task in accordance with their everyday activities.

In the current study, the unit of analysis was the activity of teacher-child dialogues, and these were examined within the activity settings in which they occurred with reference to social and historical influences. Teachers' motives were identified through their articulated philosophies and expectations for children's learning.

The concept of a "community of learners"

Extending Vygotsky's notions of the intramental (the personal) and the intermental (the interpersonal) levels of learning, Rogoff (1998) has suggested three planes of analysis, as if using three different lenses, in examining contributions to sociocultural activities. These interpretations of planes of analysis are premised on theories of activity (Leont'ev, 1981; Wertsch, 1985b). When examination focuses on one of the planes, the personal, the interpersonal, or the community/institutional, the other two planes are necessarily further in the background. In this model, no one plane can be studied in

isolation from the other two; individuals cannot be taken away from the activity to be analysed, since their contribution to the activity and their learning and development within it are so much influenced by the interactions and by the community/institutional factors that supported its occurrence. The idea of planes, rather than levels of analysis, indicates the lack of boundaries between each plane. One plane does not exist in isolation from each of the others, since they are mutually constitutive. In the context of my study, they could be said to be constantly co-constructing each other. Further, these planes are considered to be dynamically changing products of a multitude of influences across time and space, within each specific community's socio-historical and political milieu.

A variety of terms in current educational use include the concept of a community, including "a learning community" or a "community of learners" (Palinscar, Brown & Campione, 1993), a "community of practice" (Rogoff, 1995; Wenger, 1998), a "community of inquiry" (Lindfors, 1999; Wells, 1995) and "a community of understanding" (Anning & Edwards, 1999); each term implying a different focus or emphasis. Palinscar, Brown and Campione (1993) used the term "learning communities" to represent "communities in which each participant makes significant contributions to the emergent understanding of all members, despite having unequal knowledge concerning the topic under study" (p.43). In a "community of learners" each participant is valued as having important, though uneven, contributions to make; learning is conceived as a collaborative exercise, through which participants change their roles and forms of participation; and knowledge is viewed as being socially constructed as participants develop shared understandings.

Rogoff (1998) defined collaboration, or shared thinking, broadly, to include "face-to-face mutual involvements such as routine conversation, teaching, tutoring and cooperative learning; side-by-side engagements; and participation in shared endeavours without physical co-presence (such as occurs between correspondents, authors and readers of articles, or in remembered conversations). These engagements may or may not strive to promote cognitive development" (pp.679-680). Whether at home or in an institution, whether intentionally or coincidentally, children develop cognitively as older generation members of their communities inculcate them with their culture. Children's involvement in their communities will vary from full participation in adult activities,

with or without peer-like conversation, to children's exclusion from their adults' activities, as they engage in programmes developed specifically for children. In every situation, "cognition occurs in shared involvement in community/institutional endeavours" (Rogoff, 1998, p.680). Successive observations of children who are engaged with other children and the teacher(s) in authentic learning experiences of their own interests, should be able to trace both the development of ideas in the group and the changes in behaviour as a result of such learning. Evidence for such learning is provided in this report.

The term, "community of inquirers", while reflecting the aspect of collaborative learning in a community, also implies a greater specification of the ways in which people engage in authentic learning. Whether the topic of investigation originates with the child or with the teacher is less important than that they become co-inquirers in making their meanings (Wells, 1995). Children need to be really interested in making an answer to their questions and teachers need to be able to say, "I don't know, how could we find out?" This attitude of inquiry is graphically demonstrated by Wells (2001), in the area of teacher reflection. Wells made a video recording of the interactions of two Chinese-Canadian third- and fourth-grade children as the three of them co-constructed science experiences related to the investigation of bending light. Wells' initial analysis of these interactions was of the verbal utterances. It was several years later, in replaying the video to his graduate students, that he was challenged to examine his own role in colluding with the patterns of dominance and working on the periphery between the two science students. In being prepared to be so challenged, Wells demonstrates his commitment to a community of inquiry that at times spans several years.

Wenger (1998) uses the term "communities of practice", where practices are the outcomes of people interacting with each other in a variety of pursuits, tuning relations with each other and with the world. Such common activities lead to learning and result in practices that reflect both our enterprises and the attendant social relations. Where sufficient mutual engagement is present in a community, significant learning can take place and the "community of practice can be thought of as shared histories of learning" (Wenger, 1998, p.86).

At the institutional level, practices fulfil many functions, including the maintenance of the culture, through "rituals, customs, stories, events, dramas and rhythms of community life" (Wenger, 1998, p.46); helping newcomers join the community through participation in its practices; supporting communal understandings and memory so that no one person needs to know or do everything; and providing resolutions to institutionally generated conflict, such as pressures to complete one task or another. Practice is always social, in that it is done in the context of social and historical precedence, giving meaning and structure to everything that we do. Participation in community can involve many kinds of interactions, from collaborative to conflictual, or harmonious, intimate, political, competitive or co-operative. All these modes of interaction were experienced during the current project.

Wenger suggests that reification is an important aspect of community and as a complementary constituent of meaning to participation. Reification "congeals" a community's practices, imbuing them with a status that is both influential and illusionary. Something of the community's practices are inherent in the "abstractions, tools, symbols, stories, terms and concepts" (Wenger, 1998, p.59) and it is these reifications that need to be constantly negotiated through participation, if the group and the individual are to continue learning. Participation and reification are dual aspects of meaning-making and learning. "Through the negotiation of meaning, it is the interplay of participation and reification that makes people what they are" (Wenger, 1998, p.70). Teacher reflection in this study identified many "reified" practices, which then became available for critique and change.

Wenger (1998) describes the three dimensions that define a community of practice as mutual engagement, joint enterprise and shared repertoire. Mutual engagement requires a sense of belonging, of inclusion in aspects of the community that matter, the acceptance of diversity in contribution and interpersonal relationships. Joint enterprise is about a collective process of negotiation that keeps the community of practice together and about relations of mutual accountability. The repertoire of a community of practice includes "routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions, or concepts that the community has produced or adopted in the course of its existence" (Wenger, 1998, p.83). Each centre in my study was both a site

of a community of practice and a member of the wider communities of practice that embrace all early childhood centres.

Our participation in a community shapes our identity at the same time as we are shaping the community, to greater or lesser degrees. This is true for the children and for the adults who participate in early childhood programmes. Carr's (2000) research in early childhood centres provided many examples of children verbally reinforcing their identities as learners and as people in their societies. Individual identity develops within a community. An individual's identity includes the ability or inability to shape the meanings defining communities and ways of belonging in those communities. The negotiation of meanings of experiences of membership in social communities is identity building. We define who we are through our negotiated experiences of participation, in community membership. Identity is also defined through a learning trajectory (who we are and where we are going), through membership in various communities (the nexus of multi-membership) and through negotiating local ways of knowing and belonging in wider discourses (a relation between the local and the global) (Wenger, 1998). Our identity is always temporary, as we constantly redefine whom we are, taking notice and engaging either peripherally or fully, as we invest in different communities. Thus our identity is essentially a socially constituted learning process, as we create bonds in which we invest our energies. Identity is also the source of personal power; power to belong to and to influence communities and to claim membership and allegiance to the meanings and discourses within and across these communities. In this study, one of the adult participants directly attributed changes to her identity to her involvement in the study (see Epilogue). Other participants were empowered to develop and express their identities through their contributions about their learning to their wider early childhood communities. Action research, through empowering teachers to examine their own practices and remain in control of any proposed changes, is not only protective of each teacher's identity but also has the potential to enhance relationships and therefore the sense of belonging in the group.

While a community of young inquirers will tend to operate largely in the interpersonal plane, it will constantly influence and be influenced by both the personal plane of each participant and the organisation in which the group is working. Konzal (2001) described a collaborative research process in which a college researcher, a principal and

kindergarten parents engaged in a year-long inquiry about the children's early childhood experiences. Their project was identified as one way in which parents can become fully engaged members of the community of learners to which their children belong. Such conditions of mutual engagement, shared repertoire and joint enterprise (Wenger, 1998) are frequently not available to parents of the children in early childhood centres; yet these are precisely the requirements for full utilisation of a centre's learning community. Wells (2001) expressed a community of learners as forming when learners come to know each other and value what each other has to offer.

Each early childhood centre has its own unique culture of practices and patterns of interaction both within its centre community and between centres. Each case study centre in this study was unique in its practices and beliefs. One of the major tasks at the beginning of an action research programme is to make these implicit practices and beliefs explicit. It is through critical examination that the strengths of practices can be celebrated as constant improvement is sought.

2.2.2 Hearing children's voices in early childhood

A common problem in early childhood centres is that of a surfeit of teacher talk. As expressed by Pat Hoodless, albeit for seven- and eight-year-old children,

> A problem which I experienced for myself and one I observed in other teachers, was the pressing need to provide constant input for the children. I was aware that I was talking too much, dominating the conversation, or at worst, interrupting the children's line of thought (Hoodless, 1996, p.116).

Whether the teacher is "talking too much", or is otherwise engaged in housekeeping or administrative functions (Meade, 1995b) because her philosophy of learning dictates the children be allowed to develop at their own pace, the result is that children are missing out on appropriate input from the senior semiotician who is best able to support their meaning-making.

If a teacher has really heard what a child is saying, then s/he will be able to discuss the thinking of both individual and groups of children with whom s/he is regularly working and observing. The planning and provision of curricula in early childhood need to address the United Nations Convention on the Rights of the Child (Scott, 1996):

> Teachers and other workers need knowledge about children's capabilities and respect for both their powers and their rights to growing autonomy: children are able to make choices, develop responsible attitudes and become independent learners from a very young age provided that adults ensure that an appropriate curriculum is negotiated within a well-planned environment. (p.35)

The history of early childhood has traditionally unfolded within the structure of the society of the day, reinforcing attitudes of vulnerability and dependence in children under five. To develop in-depth knowledge and respect for children's capabilities, teachers and prospective teachers need support in changing historically derived attitudes and in examining their current philosophies and practices based on these ideas. Teachers and other adults have an important role in children's developing self-concepts about their learning competencies. Of particular importance in this respect is the ability of the adult to hear the child's voice and to support the development of positive attitudes to learning.

Children's voices are perhaps heard best by other children and understanding the development of shared meaning can be well demonstrated in an example provided by children themselves. Verdonik (1988), in discussing co-construction in relation to the cognitive challenges inherent in social exchanges, provided an excellent example of sociocultural learning within an ever-extending zone of proximal development for each participant. Verdonik observed five children meeting on a regular basis to practise their skateboard skills on the steps outside the public library. During the ongoing development of skills in this social activity, the participants constantly "interpreted each others' actions, motives and perspectives in a sequence of exchanges" (p.119). Intersubjective agreement about goals and means-end relations of the task was often negotiated, at the same time as the affective bond was developing between participants. In a similar manner to these peer relationships, equal relationships and negotiation

become possible between teachers and children when teachers share their power with children in co-constructive interactions.

Early childhood teachers have a vital role to play in supporting children's developing self-concepts and self-esteem, through their systems of programme planning that are central to providing opportunities for both spontaneous and planned teacher-child interactions. The construct of shared challenge is an important realm of social experience for the functioning and development of children's cognitive processes and for their beliefs about themselves as learners. Along with Verdonik, teachers need to ask: "What degree of political freedom does a child possess to truly share in the co-construction of his or her own cognitive challenge?" (Verdonick, 1988, p.120). This report argues that the co-construction of projects around children's own interests provide such "political freedom" and cognitive challenge.

2.2.3 Agency and children's rights

The concept of children learning to be in control of their own thinking and decision-making is encapsulated in the ideas of "agency" (Davies, 1990; Parsons, 1937; Smith, 1987; Walkerdine & Lucy, 1989). A sociocultural view would describe agency as residing in the collective groups to which an individual belongs. In this view, agency is discursively distributed and is available to some in the groups and not to others (Davies, 1990; Wertsch, Tulviste & Hagstrom, 1993). In particular, teachers and children position themselves to act according to their accepted roles, in a complex set of interactions that are dictated by "a complex weaving together of contradictory beliefs about the rights of the individual and the collective" (Davies, 1990, p.342). For example, even though children may have the competencies to speak the way adults do, they generally choose not to position themselves as adult speakers. Changing roles, as teachers and children learn to co-construct understandings, takes time and commitment, especially from the teachers who are relinquishing the power normally granted to adults through virtue of being an adult.

Holquist (1990) described Bahktin's belief that the role of language is central in the process of socialisation, and that each person has access only to the discursive practices that are available in their own social environments. We think the way we do because of the ways in which we talk, and our talk is defined by the discursive practices of the

collectives of which we members (Davies, 1990). It is these discursive practices that need to be articulated, deconstructed, unpacked, for teachers to identify their views of the child and their own role in supporting learning. "If we always do what we've always done we'll always get what we've always got" (source unknown) is an old saying that expresses the subtle power of previous generations' practices if these continue uncontested.

Support in many parts of the world for empowering children has been formalised through the signing by Governments of the Rights of the Child documents. The stated attitudes of today's political leaders towards children and childhood have been set under the United Nations Convention on the Rights of the Child, ratified by New Zealand in 1993. Article 12 (Convention on the rights of the child, 1997) sets out the responsibility placed on adults to recognise the child's personality and autonomy, as an autonomous person:

> Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child. (pp.41-42)

Further, Article 13: 1 states:

> The child shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of the child's choice. (p.44)

Early Childhood professionals have a responsibility to promote the recommendations of United Nations Convention on the Rights of the Child through their curriculum planning processes (Scott, 1996). Article 29 states "the education of the child shall be directed to the development of the child's personality, talents and mental and physical abilities to their fullest potential" and "the preparation of the child for responsible life in a free society" (Convention on the rights of the child, 1997, p.49). The spirit of these articles is reflected in the Principles and Strands of *Te Whāriki*. While there is debate

about the openness of the document to subjective interpretation (Cullen, 1996), it does theoretically provide the base for programmes that meet children's rights to empowerment within reciprocal, responsive relationships.

Clearly, the realisation of the rights of children, granted under the law of the land, remains "overwhelmingly dependent on the attitudes and actions of their parents" (Children's Rights Office, 1995, p.34) and of their caregivers and educators when the children are involved in institutions other than their family. "Traditionally in our society, as in most if not all others, children are viewed as the property of their parents, who are invested with the rights seen as necessary to carry out their duties" (Lansdown, 1994, p.33). So long as childhood is viewed as a time of cute innocence and vulnerability, during which the adults need to make every decision and to accept responsibility for the child's every action, children will continue to be denied their rights of full participation. The attitudes of society to children, to their learning and to how parents expect their children to learn, will continue to impact on their expectations of early childhood teachers' interactions with children. Meanwhile, children's rights literature is supportive of programmes in early childhood that empower and give agency to children. Co-constructing ideas and activities with children has the potential of empowering both the children and their teachers and to give children collective agency.

2.3 IMPACT OF THEORETICAL DISCOURSES ON PRACTICES AND RESEARCH IN EARLY CHILDHOOD

The legacy of the basic orientations to development and learning (direct instruction/transmission, behaviourism, developmentalism/constructivism and social constructivism) are evident today in early childhood centres in New Zealand and throughout the western world, as identified by such researchers as Moyles and Adams (2000), Nuttall (2001) and Van Oers (1999). Research on each of the basic approaches to young children's learning attempts to identify outcomes for children in all areas of their development, not only for their graduation from their early childhood experiences into the school system, but also for their ongoing learning and success in life. It is to outcomes for children as a result of their adults' theoretical understandings that this discussion now turns.

Advocates of a more cognitive curriculum, with direct teaching and stimulation, have always considered that failure to take advantage of such methods in the early years would be likely to lead to a downward spiral of failure for children once they enter the school system. In episodes of direct teaching, the parameters are tight in terms of planned outcomes and expectations of the teacher that the children will conform to these. A major assumption in this approach is that it is the teacher who holds (existing) knowledge and the children who need to learn this knowledge in order to function in society. Warham (1993) suggested that outcomes for children, when direct instruction is the norm in a classroom might include: a fostering of competition to the point of confrontation; damage to group and individual relationships; discouragement of the children in taking initiatives; the increase of children's dependence on the teacher; and the risk of damage to the children's future attitude towards teachers and education. Warham's research identified teachers (working with four- to eight-year-old children) who had "dominant identities", in whose classrooms a situation of inequality was created, with the teacher holding all the power and decision-making functions. Teachers with "less dominant identities" used a far greater range of strategies in their interactions with children, encouraging them to be independent thinkers and learners. According to Warham, in such classrooms, trust, confidence and security were fostered, children developed a sense of self-worth and respect for others, they became independent and self-reliant, using their own initiative and a sense of equality was also fostered.

Vygotsky himself engaged with analysis of research on outcomes for children as the result of their adults' beliefs and practices of interaction with them. By using tests to determine the level at which children understand, we are determining yesterday's progress and missing opportunities to extend the child today. Vygotsky (1926) came to this realisation through working with "retarded" children where, because the children were believed to be incapable of abstract thought, they were exposed to none. The outcome was a reinforcing of the lower limits of these children's capabilities in abstract thinking. The reverse practices were necessary to support them in reaching their potential; they require exposure to abstract thinking at a level that will push their thinking. Similarly, for "normal" children, the new formula became "the only good learning is that which is in advance of development" (p.89). Developmental processes lag behind the learning process and this is what creates the zone of proximal development.

2.3.1 Learning environment: implications for children

Stipek and Byler (1997) found a significant correlation between teachers' espoused beliefs and the practices implemented in their preschool and kindergarten classrooms; specifically, they found that, when teachers held child-centred beliefs, the social learning climate they developed with the children was positive and their instructional practices were child-centred. Teachers who held a basic-skills orientation to learning, on the other hand, were found in classrooms with a negative social climate.

Vygotsky's theory has many implications for the "instruction" of children, in support of their thinking developing from the natural to include the scientific forms. It is important to examine the issue of learning concepts from two directions: that of the use of children's everyday knowledge and their extending this to more formal understandings, as well as their application of formal understandings into their real worlds outside school and centre. However, many writers attest to the lack of links between school and everyday learning, in both the context of what is being taught and in the methods through which learning is considered legitimate (Wells, 2001). Newman and Holzman (1993) stated:

> Traditional schools are not ZPDs; they teach children and adults alike to devalue and even destroy ZPDs. In the typical classroom children are taught to view the major activities in the ZPD – working together, imitating that produces something other than mere repetition, collectively changing the total determining environment into something that is not predetermined, reshaping the existing tools of language and play into new meanings and discovery – as illegitimate. (p.195)

Vygotsky was never specific about defining what teaching methods or "instruction", a word he used frequently, meant in the classroom, for him. In discussing the learning of natural and scientific concepts, Vygotsky stated, "The scientific concepts evolve under the conditions *of systematic co-operation between the child and the teacher. Development and maturation of the child's higher mental functions are products of this co-operation*" [my italics] (Vygotsky, 1986/1934, in Rieber & Wollock, 1997, p.148). *"In the end the pupils are educated by what they themselves do and not by what the*

teacher does. It is not what we give but what we receive that is important. It is only by being independent that the pupils change" (my italics) (Vygotsky, 1926, in Rieber & Wollock, 1997, p.161). "Reading and writing must be *something the child needs*... writing must be *'relevant to life'* – in the same way we require a *'relevant' arithmetic*" (p.118). Writing should also be taught naturally, "*cultivated rather than imposed*". "Natural methods of reading and writing involve appropriate operations on the child's environment. "*Reading and writing should become necessary for her in her play ... children should be taught written language, not just the writing of letters*" (pp.118–119). Vygotsky clearly favoured supporting children's learning in the context of their interests.

A sociocultural environment for teaching would address all aspects of living and interacting, including issues of power, agency and interactions between all participants, from government to support and assessment agencies to school/centre organisation and administration, teacher-teacher interactions and teacher-parent-child communication and interactions. In Rogoff's (1998) terminology, all three planes – the individual, the interpersonal and the institutional – need to be addressed and all need to contribute, interdependently, to the environment created for children's learning. Rogoff (1995) identified the types of sociocultural processes and interactions appropriate within each plane: in the personal plane children engage in *participatory appropriation* and in these processes change (or learn), thereby becoming prepared to engage subsequently in similar activities; in the interpersonal plane, *guided participation* describes the tutorial processes in which children and their social partners participate while developing their own contributions to and extension of, cultural practices; and *apprenticeship activities* are those in which the child is engaged in community activities with others.

The early childhood curriculum, being a non-compulsory sector of education and therefore relatively unconstrained by specific learning goals and outcomes for the children, could be ideally situated to lay sound foundations for children's positive beliefs about themselves as learners. A programme that focuses on providing shared goals within small groups of children, maintaining individuals in the group working at the cutting edge of their zone of proximal development in challenging and fulfilling activities, supported by sensitive teachers, has the potential to provide many instances of co-constructed learning, thereby empowering children to exercise their own agency.

Researchers have found that by the time they start school (at five years of age in New Zealand), children have already developed learning orientations towards either their own performances or their learning competencies. In the former case, children work towards gaining positive and avoiding negative judgements about their performance, whereas learning-goal children tend to work towards increasing their competence (Smiley & Dweck, 1994). Carr (2001), working in early childhood centres in New Zealand, found "some powerful processes...appeared to be encouraging performance goals as a 'default setting'" (p.40) and low-level performance goals tend to be the norm, especially when there is no adult present. Learning outcomes for children are influenced by their selection of specific aspects of the curriculum on offer and this selection is clearly influenced by their social identities and beliefs.

Carr (2001) suggested that, unless the group setting specifically nurtures learning goals, children are likely to focus on their performance goals rather than on learning goals. While competent children are effectively able to combine strengths from both competency and learning orientations, an emphasis on competency has been shown to be debilitating for learning. Children with learning goals work to increase their competence; they view failure as motivation for greater effort, they seek challenges that foster greater learning and they are persistent in meeting challenges. Performance-goal children, in contrast, also seek challenge and show persistence while perceiving themselves as high performers, but are nevertheless vulnerable to becoming helpless in the face of failure. Dweck and associates (Dweck & Leggett, 1988) have found that performance-oriented and mastery-oriented children maintain differing theories of intelligence and differing behaviour patterns, related to their goal orientations.

Many authors attest to the necessity of attending to children's meaning-making in the interests of optimising their learning activities (Athey, 1990; Fleer, 1995a; Forman, 1996; Hedegaard, 1993; Nutbrown, 1994; McNaughton, 1995; Van Oers, 1997). Making meaning, or semiotic activity, is the activity of relating a sign and its meaning. Van Oers (1997) investigated young (three- to seven year-old) children's semiotic activity, relating sign and meaning in their drawings. His study included the investigation of relationships between changes in signs and the concomitant changes in meaning, as well as means of improving the existing relationship between sign (or sign system) and meaning (or meaning system). These children enhanced their self-made

iconic representations of real-life situations and objects with the use of verbal explanation and narrative. Thus, the meanings represented in the drawings were dynamic and creative, with the children at times redrawing the same depiction in more complex form in interaction with an "advanced semiotician". Teachers can optimise children's learning by supporting them in attending to the incompleteness of their signs and in providing opportunities for dialogue about their ideas. However, to do so, many teachers will need to

> abandon the idea that children's drawings are private expressions that shouldn't be discussed from another's point of view. They will have to accept the idea that children's drawings are an attempt to explain the meanings that children have in their minds (Van Oers, 1997, p.244).

Supporting children's learning in this way also presupposes teachers' abilities to make time to spend listening to children's ideas and being prepared to act on the understanding thus gained of children's ideas and interests. These roles of the adult in supporting children's thinking are central to my thesis.

While co-operative learning has been found by Johnson and Johnson (1987) to be effective for any instructional task, they also note from their research that "the more conceptual and complex the task, the greater the superiority of cooperative learning over competitive or individualistic learning" (Johnson & Johnson, 1987, p.44). When children are grappling with conceptual understandings or new principles, it seems they benefit most from the free exchange of ideas and dialogue among equals, as happens during collaborative inquiry. As a corollary, specific skills or rote learning was found by Damon (1984) to benefit most from peer or adult tutoring, as in scaffolding. Thus, teachers need to be competent in the full range of interaction strategies and to be able to use each for appropriate learning. Where teachers use a limited range of interactions, children miss out, or worse, engage in non-positive learning about themselves as learners.

2.3.2 Two metaphors for teacher-child interactions

Metaphors are pervasive in our daily lives, reflecting and shaping the ways we conceptualise; they have consequences (Lindfors, 1999). Lakaff and Johnson (1980) expressed the influence of metaphor as:

> Metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms if which we both think and act, is fundamentally metaphorical in nature....(if) our conceptual system is largely metaphorical, then the way we think, what we experience and what we do every day is very much a matter of metaphor...human thought processes are largely metaphorical. (pp.3,6)

Two metaphors for teacher-child interactions of specific relevance in this study are scaffolding and co-construction.

The scaffolding metaphor

The scaffolding model, as discussed by Berk and Winsler (1995), Dockett and Fleer (1999), Fleer (1995a), Gardner (1996) and MacNaughton and Williams (1998), is common in early childhood settings and the term "scaffolding" is frequently used by teachers. It is important for teachers to be clear about their purposes and beliefs when interacting with children, so they are in a position to monitor and adjust practices within an articulated philosophy.

Wood, Bruner and Ross (1976) used the carpenter's metaphor of scaffolding to capture many aspects of adult support of children's efforts. In scaffolding, the aim of the adult is to support the children in their efforts towards the level at which they are capable of working. In the process of graduated assistance (Greenfield, 1984), the adult, or more expert peer, gradually releases control to the child as they become more able to accept responsibility for task completion (Berk & Winsler, 1995; Bredekamp & Rosegrant, 1995; Stone, 1993). My thesis argues that the scaffolding metaphor has not contributed to an intuitive understanding of Vygotsky's sociocultural theories in practice. This is of concern when teachers claim to be scaffolding children's learning, which they could

well be doing, without also attending to the child-empowering and relationship aspects of sociocultural theory. Here is a more specific example of teachers who may be using *Te Whāriki* for planning and assessment without really understanding its underpinning philosophies of learning as based in sociocultural theory (Cullen, 1996; McNaughton, 1996; Nuttall, 2001).

Identifying the role of children in their own learning and advocating for tutoring to be contingent on the child's responses, as happens under the metaphor of scaffolding, was an improvement on teaching without reference to children's progress (Tharp & Gallimore, 1988). However, the scaffolding model has been criticised for its lack of reference to wider sociocultural and historical influences (Stone, 1993). In particular, the relationships between participants in the scaffolding situation, both in the "here and now" and in interchanges over a period of time, are key factors in any learning situation. Successful scaffolding involves the construction of shared definitions of the situation and this construction involves the presence of trust and inference (Rommetveit, 1985). Such factors of ongoing learning and relationships were not investigated in early scaffolding research.

Scaffolding of children's learning may take many forms, ranging from quite direct teacher input to simple acknowledgement of a child's efforts (Rogoff, 1998). In fact, the acceptance of Wood, Bruner and Ross's (1976) conception of scaffolding as a metaphor for learning, is itself contentious (Rogoff, 1998). Scaffolding is considered to be too mechanical a model, in that a scaffold is an inert support for a structure (that is, the child), maintained by external forces (that is, the adult) until further external forces (that is, planning procedures, activities) are able to sufficiently build the structure that it is able to stand alone.

> Scaffolding focuses on the tutor's efforts as they relate contingently to the novice's successes and failures...[and] specifically includes the novice's progress in the concept, recognising that a tutor's moves mean quite different things if they follow upon an error or a successful attempt by a novice (Rogoff, 1998, p.699).

Rogoff criticises the juxtapositioning of scaffolding and the zone of proximal development because of the weighting of control towards the adult, in research on scaffolding. "Scaffolding is a specific technique focusing on what experts provide for novices, with individuals as the basic units of analysis and attention to particular instructional moves that can be operationally defined as epitomising scaffolding" (Rogoff, 1998, p.698). Specifically, the scaffolding metaphor relates to interactions without addressing the wider implications of sociocultural theory for changing institutional and societal attitudes towards power and children's agency.

The role of the adult in supporting children's learning within the zone of proximal development is clearly a crucial one. In early research scaffolding was characterised as a specific pattern of interaction that maintained the power and control with the adult, as the tutor, providing challenges for children, as the novices. These early studies had a major focus on the mother-child dyad, investigating the mother's didactic performance in supporting her child's learning of a given task with a known outcome (e.g., Wood, Bruner & Ross, 1976; Wood & Middleton, 1975). Given that these investigations usually also required the mother-child dyads to attend sessions in a clinical laboratory, the settings were contrived and outcomes, therefore, were not necessarily able to be generalised. In most scaffolding research, the adult has a specific end in mind, towards which the child is supported by an adult or by a more experienced peer.

The processes of scaffolding have been identified by Wood and colleagues as: recruitment of interest, reduction of the number of steps required for solving the problem, ongoing motivation of the child and task direction, illumination of discrepancies between the child's performance and the ideal, controlling frustration and risk in problem-solving and demonstrating the product (Wood, Bruner & Ross, 1976; Wood & Middleton, 1975). Tharp and Gallimore (1988) proposed six means of assisting student performance within their zone of proximal developments: modelling; contingency management, using the familiar system of rewards and punishment following behaviour; providing feedback; instructing; questioning, usually concerned with assessment and cognitive structuring; and task structuring, chunking, segregating, sequencing or otherwise structuring a task into or from components. Notice in every described means of assisting performance that the control remains firmly with the teacher/supervisor/mentor. It is the adult who "designs", "creates", "mentors", "assists"

and "promotes". Such language serves to perpetuate current belief about children, based in developmental theory, that requires adults to do their thinking and organising for them, until they have reached such a stage (as adults) to be able to do it for themselves. Far from empowering children, the discourse of Gallimore is an example of what Cannella (1997) describes as "being rooted in the scientific, linear, deterministic enlightenment beliefs" of much current educational ideology and practice of curriculum planning (p.102).

In agreement with Greenfield (1984), Rogoff (1998) and Stone (1993), a contention of my thesis is that, as a means of assisting children's learning, scaffolding maintains the adult as the expert, in charge of the task and guiding the direction of the activity, usually with a preconceived outcome in mind. However, the concept of scaffolding has been broadened by other, early childhood researchers, such as Fleer (1999), Elliott (1995) and MacNaughton and Williams (1998), who have extended the metaphor to include items that others such as Rogoff (1998) would include in the co-construction metaphor rather than as aspects of scaffolding. Gardner (1996) also challenged Bruner's (1986) list of scaffolding behaviours as being context-specific, involving dyads, as overly prescriptive and predating sociocultural theory. Gardner's solution was to redefine scaffolding to include only the mediation aspects of interactions and not those interactions in which the teachers were clearly in control of information and of how children would engage in discussion about topics. For these interactions Gardner introduced the term "structure" to fit between "demonstrate" and "co-construct" on the Bredekamp and Rosegrant (1992, 1995) continuum of teaching behaviours (see Section 8.1).

Later studies of the zone of proximal development focus on the participants' mutual contribution of learning to the activity, allocating attention to institutional and historical aspects and to the processes of communication within the activity, in the community in which it occurs. In these studies, of central importance is the mutuality of the roles of adults and children in initiating and managing the shared interaction (Pratt, Kerig, Cowan & Pape, 1988; Rogoff, 1998). Attitudes of both the scaffolder and the learner towards the to-be-learned activity will clearly have an influence on interactions as well as on the likely outcomes. Rogoff (1998) and Verdonik (1988) identified the role of relative power between participants as important in direction-setting and success in

scaffolding of learning, and Carr (2000) analysed teacher-child interactions in terms of the power demonstrated by each of the participants. Issues of relative power between teachers and children as they dialogue, feature in the case study centres of my study and the teachers' understandings of scaffolding and co-constructing learning seemed to underpin their use of power in the relationship.

Thus, teachers in early childhood have access to a variety of concepts that have been ascribed to scaffolding and this has led to confusion about what constitutes scaffolding interactions. In this thesis I shall refer to the form of scaffolding that came to be attributed to Bruner (1986, 1990) and to Wood and his colleagues (Wood & Middleton, 1975; Wood, Bruner & Ross, 1976) as the early scaffolding metaphor. This form of scaffolding will be distinguished from the later understanding of the term, which I refer to as the generic form of scaffolding.

The co-constructing metaphor

The derivation of co-construction as an interaction strategy is from the social constructivism of Vygotsky. According to Valsiner (2000) the term co-construction was used by Vygotsky to denote the combination of both environmental and social influences on development and learning. Valsiner defines co-constructivism as a synthesis of the sociogenetic view of Vygotsky and the psychogenetic perspective of Piaget. In this view, learning and the development of expertise, are seen to occur within the joint activities of socially organised settings. The dynamic tutoring of the child's more expert peers, siblings and adults provides the flexible support required for this learning to take place. Within such a social milieu, children continuously and actively construct their own learning, through constructing their own schema or patterns of thinking.

The sociocultural framework for teaching and research, advocated by Vygotsky, has more recently been further developed and become known as "the co-constructivist perspective" (McNaughton, 1995). The term "co-construction" emphasises the child as a powerful player in his/her own learning. To co-construct is to construct with others. The child as co-constructor provokes an image of the child as "rich in potential, strong, powerful, competent and most of all, connected to adults and to other children"

(Malaguzzi, 1993, p.10). "As a teaching strategy, co-construction refers to staff and children forming meaning and building knowledge about the world with each other. Staff and children co-construct their meanings and their knowledge" (MacNaughton & Williams, 1998, p.177). Co-construction, thus, places emphasis on teachers and children together studying meanings, in favour of acquiring facts. Studying meaning requires teachers and children to make sense of the world, interpreting and understanding activities and observations, in contrast to acquiring facts, that requires the gathering of descriptions and information about our world. Thus, learning construction is a creative activity in which children who are involved in meaningful interactions are able to "synthesise knowledge from disparate opportunities and construct further learning opportunities" (McNaughton, 1996, p.5).

In order to co-construct meaning and understanding, the teacher needs to become aware of what the child thinks and knows and understands and to engage with this body of knowledge. The child's own expertise is acknowledged as being as valid as the teacher's and is frequently more accurate and detailed when the topic under discussion is outside the adult's field of expertise but within the child's field. Reciprocally, teachers need to learn to share their own thinking about the topic under discussion with children, regardless of whether the adult or the child initiated the topic. Thus, co-construction requires excellent skills of dialogue between teachers and children.

In their research Van Oers and Wardekker (1999) were able to distinguish between two meanings of "learning" in which children and adults engaged:

learning as a microgenetic process, in which an already acquired action is improved through practice. This type of learning is towards mastery, or automatisation and as such, there is little room for personal choice concerning the learning process and

learning as an expansion of an activity. Here, new actions are acquired "in the context of sociocultural activity...in addition to already acquired actions...and elaborating a new concept" (Van Oers & Wardekker, 1999, pp.231-232).

It is the second kind of learning, identified by Van Oers and Wardekker, learning as an expansion of an activity, that is co-constructive in nature. This kind of learning has the

potential to be authentic learning, in that it can be based on a genuine problem-solving situation related to the child's current activity. Using direct instruction methods for supporting the child in mastering these actions would be possible, though they would be less likely to be examples of authentic learning. The authenticity of learning refers to activities in which children are encouraged to engage, that are both of interest to the children and of value in their culture.

Wells (2000) saw schools in general as they are currently organised, as "temporary aberrations" (p.59). By this, Wells meant that today's schools owe more to the system of systematic instruction developed for the purpose of preparing students to work in an industrialised era than to the creation of knowledge and the development of personal identity. The curricula of schools, according to Wells (2000), emphasise the transmission of cultural knowledge and skills, independent of the aspirations and the needs of the students. Such schools tend to produce successful graduates who are "conforming and risk-avoiding" and unsuccessful graduates who are "alienated and either self-doubting or rebellious" (p.59). What happens in schools is of immense importance to early childhood educators because of the element of preparation for school that assumes a degree of importance in any early childhood programme.

In tracing the development of the many theories that currently inform practices in our centres, as above, the teachers in this project and I debated evidence of the implementation of them in each centre. In doing so, many of the teachers came to realise the sources of their beliefs and practices and were then in a position to critique them and to make changes.

Scaffolding and co-construction as interpreted by the field of early childhood

In the early childhood field MacNaughton and Williams (1998) view co-construction as forming or building with others. *Scaffolding* of children's learning, working within the children's *zone of proximal development*, developing *shared meaning* or *intersubjectivity* between adults and the children they are working with and working on *projects* with children, are all commonly recommended practices in many recent early childhood texts (Berk & Winsler, 1995; Dockett & Fleer, 1999; Fleer, 1995b; MacNaughton & Williams, 1998; Ministry of Education, 1998). Berk and Winsler

(1995) identify five elements of scaffolding learning as: a focus on joint problem-solving, the development of intersubjectivity, the maintenance of a sensitive and responsive emotional tone throughout the interaction, the ability of the adult to keep working on tasks within the child's zone of proximal development and the promotion of children's self-regulation). Dockett and Fleer (1999) hold a similar view of scaffolding as "the support that is provided for the child to extend their knowledge, skills and understanding as they move through the zone of proximal development" (p.188). Thus early childhood teachers have been introduced in print to the idea that scaffolding learning for children is an extension of Vygotsky's ideas of the zone of proximal development as the zone in which learning occurs. On the other hand, Rogoff (1998) views scaffolding and working in the zone of proximal development as serving different functions and being distinct and in several ways.

According to Greenfield (1984), scaffolding provides a focus on the instructional moves a person with more expertise provides for a student; the basic unit of analysis is the individual, as the tutor responds contingently to the student's development of concepts. Scaffolding has been criticised as seldom going beyond the specific interactions to place them in the context of a cultural and institutional framework (Nicolopoulou & Cole, 1993). Rogoff (1998) is clear that "sociocultural approaches to the study of experts assisting novices focus on examining how participants mutually contribute to learning, with attention to institutional, historical aspects of how the activity functions in the communities in question" (p.699). In this view, working in the zone of proximal development is about how someone with greater expertise helps a less competent person participate in sociocultural activities in a way that exceeds what they could otherwise achieve. Participants, whether expert or novice, mutually contribute to the learning, in the context of how the activity functions in the community in question. The term that has become most appropriate for such mutual contribution is the co-construction of understandings.

Berk and Winsler (1995) and Dockett and Fleer (1999) expanded the notion of scaffolding as defined by Rogoff (1998), and Wood, Bruner and Ross (1976) to include aspects of teacher-child interactions that other researchers would define as co-construction of understandings. MacNaughton and Williams (1998) devote separate chapters to the topics of "co-constructing", "empowering" and "scaffolding", among

several other "techniques for teaching young children", without identifying the differences and similarities between each technique. To do so could be difficult, since there are so many skills and processes that would be common to each of these topics. This overlap of terminology and meanings between different educators and researchers makes it important, when talking with teachers, to first establish a common language and understanding of meanings.

The metaphors of co-construction and collaboration are more consistent with sociocultural theory and with the zone of proximal development as originally proposed by Vygotsky (1926) and discussed above, than is the metaphor of scaffolding. Often used synonymously with scaffolding, the zone of proximal development is a quite different concept, serving different functions. Studies of the zone of proximal development focus on the participants' mutual contribution of learning to the activity, allocating attention to institutional and historical aspects and to the processes of communication within the activity, in the community in which it occurs. In such studies, the mutuality of the roles of adults and children in initiating and managing the shared interaction is of central importance.

Whenever adults and children are working together, the potential is present for participants to manage their joint activities in ways that involve them in shared thinking (Vygotsky, 1926). Each participant, regardless of age, can be regarded as having contributions to make from a more expert position than any of her/his companions and each can fulfil a leadership role at different stages of the interaction. Both adults and children can learn from the situation, though each is learning different things. It is from developing shared meanings and in working constantly within children's zone of proximal developments, that the Reggio Emilia pre-schools (Hendrick, 1997) have developed their concepts of projects, which so many early childhood centres currently aspire to emulate in their own cultural settings.

Vygotsky believed that a child learns through the organisation of the environment to provide ever-new challenges and examples of ways of behaving, to encourage the establishment of new connections in knowledge and understandings, based on previous experiences, "let the child himself investigate the most complex and the most involved circumstances. If you would like a child to learn something well, take care to place

obstacles in his path" (Vygotsky, 1926, p.175). Saloman and Perkins (1998) propose three propositions relating individual and social learning to each other: that individual learning may be more, or less, socially mediated; that what is learned might be distributed amongst the collective more than in the mind of any of the individuals within that collective; and that individual and social learning can interact over time to strengthen one another in what they call a "reciprocal spiral relationship" (p.18). This idea of spiral reciprocities between the different planes of learning is especially supportive of the concept of co-construction of understandings across space and time, of which examples are drawn in this study.

Cole and Engestrom (1993) agree that, from a co-constructive perspective, cognitive development is viewed as a function of the group or institution – "distributed" – rather than of an individual or collection of individuals. Adult and peer roles are important as children learn through collaborative activities. Lindfors (1999) talks about "the surround view" in identifying that "interaction is 'located in', 'situated in', 'embedded in', 'occurring in' (and) 'surrounded by' a given context" (p.217). In seeing inquiry utterances as acts of connection, Lindfors identifies a classroom context that is good for inquiry is one in which children know their interactions are valued.

Central to the current study is the identification of specific techniques of teachers as they facilitate children's learning in early childhood, and this study set out to investigate the nature of this facilitation. Collaboration has been studied in many situations in which the outcome of interactions has been pre-determined by the adult, but less often in "circumstances in which partners are mutually engaged but without interaction or instruction as their goal" (Rogoff, 1998, p.722). In the latter situation, the most frequent studies are those of peer scaffolding and specifically for Palinscar, Brown and Campione (1993), reciprocal teaching. However, in reciprocal teaching, the discussions are not open-ended but they are very structured processes.

What, then, constitutes a session of shared meaning or collaboration? Tharp and Gallimore (1998) attempted to shift teachers from a didactic, skills-based framework to one in which children's learning became the focus. The competent teacher will use many forms of teaching, including skills and processes nested variously within both the schooling and the developmental models of learning:

> Judicious use of recitation and other forms of automatic, technical and didactic teaching surely is a part of the effective teacher's armamentarium. But at best, recitation and technical, didactic and automatic teaching are not sufficient. Other kinds of teaching are also necessary and more important. (p.18)

These "other kinds of teaching" include the development of teacher-child intersubjectivity and programmes based on children's interests and levels of understanding. While lecturing, instructing and contingency management can be examples of assisting performance within the zone of proximal development/ collaboration, they can each also be examples of didactic teaching of topics or themes out of the context of children's experiences or interests, as can any form of scaffolding. Whether or not children are learning within a sociocultural paradigm will depend both on specific interactions and on the whole educational environment. Rogoff (1998) considers that:

> as long as the endeavour and its thought processes occur at least partially in common, I regard the activity as involving collaboration. A person who is actively observing and following the thinking or decisions made by another is participating whether or not he or she contributes directly to decisions as they are made. A lecture can involve collaboration if either the lecturer or the audience (or both) manage to engage in thinking together. (p.724)

2.4 AN EXEMPLARY PROGRAMME WORKING WITHIN CHILDREN'S ZONES OF PROXIMAL DEVELOPMENT

The well-known and often modelled set of centres that appear to satisfy the major tenets of Vygotskian theory, both in philosophy and in practice, is a group of early childhood centres known as Reggio Emilia centres in Northern Italy. These pre-schools developed in the specific post-war culture out of a group of parents' vision for a better education for their children. While the successive leaders of the schools have selectively used theories and practice from around the world, the programmes they have developed are the outcome of their unique synthesis of the "empirically and philosophically based positions espoused by other contemporary scholars" (New, 1998, p.275). Teachers and

parents collaborate in observation of and planning with children and with other community members. Their's is a "community of inquirers" (Killion & Todnem, 1991) in which children and teachers alike have "multiple opportunities to hypothesise, experiment, evaluate, reflect and share their understandings with others" (New, 1992). The theoretical frameworks guiding all practices are the social constructivist and interactionist approaches.

In the Reggio schools, teaching and learning are inherently linked; "each child is unique and the protagonist of his or her own growth" (Gandini, 1998, p.128). One of the most distinctive features of the Reggio Emilia approach to programming is the involvement of groups of children in extensive in-depth investigations. Such projects provide opportunities for children to be involved in meaningful activity, ongoing decision-making and problem solving, of their own choosing and in collaboration with chosen peers and adults. "Observations of the children at work in Reggio Emilia reveal how a wide variety of visual media are used to explore understandings, to reconstruct previous ones, to construct and co-construct revisited understandings of the phenomena investigated" (Katz, 1998, p.28). This is a description of teachers and children empowered to work consistently within their zones of proximal developments, in an ever-challenging and reflective, revolutionary environment that does not accept the status quo of society for administrators, teachers, families or children.

Much has been written about the Reggio pre-schools, by researchers and educationalists from many countries. However, no definitive research has been conducted by an independent researcher on outcomes for teachers or children as the result of their involvement in these programmes. Reggio administrators and founders are adamant that their programmes are specific to the contexts of northern Italy and that they do not choose to be researched by outsiders. While many of the ideals that underpin Reggio are transportable to other contexts, Reggio pre-schools can exist only in the Reggio region of Italy. For similar reasons, no written Reggio curriculum exists, even for the Reggio pre-schools themselves. However, many other countries have been convinced of the value of supporting children's learning through the project approach and since the start of my own research, some of these have been described in print (Dahlberg, Moss & Pence, 1999; Helm & Katz, 2001; Hendrick, 1997; Katz & Chard, 2000).

My research was an opportunity to interpret the Reggio principles and ideals with the teaching teams of the case study centres in their own New Zealand contexts, though I did not set out at the beginning of my study to introduce Reggio to these centres and this was not the major focus in any of the teams. Each team worked with its own priorities, collecting teacher-child dialogues for analysis and utilising their understandings of both the children's interests and strengths and their own interactions with children, to co-construct authentic projects with them.

2.5 CHAPTER SUMMARY AND RATIONALE FOR THIS STUDY

The current move towards embracing a sociocultural paradigm requires teachers who continue to plan for children's learning in the developmental paradigm, to rethink their planning and interaction strategies. Vygotsky and post-Vygotskian theorists have advocated the development of ongoing intersubjectivity between teachers and children, during which there is an emphasis on equal power relationships with joint understanding and decision-making. In this paradigm activity settings in which children are engaged are meaningful because they are based on children's real-life interests, and extensive investigations encourage the development of collaborative relationships and jointly constructed higher order thinking (Kozulin, 1998). Scaffolding and co-construction are two terms that describe teacher-child interactions and there is some confusion in the literature about the similarities and differences between these terms (Rogoff, 1998).

Meanwhile, research in early childhood services consistently demonstrates that staff interactions with children tend to be of a superficial nature, seldom succeeding in tapping into children's thinking, let alone challenging and extending thinking through scaffolding learning (Meade, 1995a; Smith, 1996). If we acknowledge the importance of adult-child intersubjectivity (Goncu, 1993, 1999; Verba, 1994) teachers must get to know every child (Smith, 1996).

Given my understandings and interpretations of sociocultural theory as above, my research questions related to their current and potential application in support of children's learning, in four early childhood centres. My investigation was concerned first with whether or not teachers in four case study centres were working within a sociocultural paradigm to support (scaffold) children's learning and second, with what

specific processes within action research might be identified as particularly supportive of teachers as they work to enhance their interactive skills with children. Through my engaging with the teachers in such collaborative investigation, I expected they would progressively articulate their philosophies of learning, either in preparation for or as the result of the changes in some of their practices. As the project progressed, I also became especially interested in perceived differences and outcomes for teachers and children, of working within the metaphors of scaffolding learning for and of co-constructing learning with, children. The early literature on scaffolding has been critiqued as being overly task-oriented and researched in the laboratory, out of the context of children's real lives. Although more recent texts provide a broader definition of the term, teachers could well claim to be scaffolding, when using the original, more teacher-directed, definition.

My research questions became:

1. *How is children's learning co-constructed in early childhood centres?*
2. *What content knowledge and professional development (PD) processes support staff teams as they learn to co-construct children's learning?*

These questions, how they became focused and how investigated within the everyday activity of each of the four case study centres, are the topics of Chapters Three and Four.

CHAPTER 3

TEACHER CHANGE: CONCEPTUAL BACKGROUND TO THE METHODOLOGY OF THE STUDY

"We teach to change the world. The hope that undergirds our efforts to help students learn is that doing this will help them act towards each other and towards their environment, with compassion, understanding and fairness" (Brookfield, 1995, p.1).

3.1 INTRODUCTION

In this chapter I discuss motivation and models for teacher change, leading to my justification for my choice of facilitated and participatory action research as my major model for change. Collaborative action research is equated with co-construction of understandings, with links made between the literature on adults co-constructing learning with children and themselves co-constructing their programmes of professional development; hence the terms co-constructed, or collaborative, action research. A discussion of action research and the case study method, both central to my work with four case study centres, is followed by a conceptual discussion of validity and reliability in qualitative research from a sociocultural perspective, and of the ethics of action research.

Professional development for a teacher is the total of formal and informal learning experiences throughout one's career from pre-service teacher education to retirement with the aim of promoting growth and development (Fullan, 1991; Katz, 1984). In Vygotsky's words (Vygotsky, 1997) "education always denotes change. If nothing changes, then nothing has been taught" (p.104). Teachers are changing all the time, both developmentally through experience and the ongoing development of expertise, and deliberately through engagement in planned programmes of professional development (Fullan, 1991; Katz, 1984).

Anning (1997) developed a model of influences on the teacher that includes historical and political changes in national policies and changes in curriculum models that have

over-arching influences in contributing to a teacher's style and content of teaching. Anning's model identifies the following contributing influences on a teacher's practices: a teacher's background and life experiences have led to personal beliefs and values that underpin teaching practices; the centre context influences daily experiences of teaching and learning; professional knowledge is developed through in-service programmes and underpinning ideologies; and role models of colleagues will be influential within the centre and regional context. This model helped the teachers and me understand the many factors involved in our own research. During our research programme, we focused mainly on teacher interactions with children, each examining their own thinking about appropriate interactions and the thinking of their colleagues. The centre programme was aimed at developing our professional knowledge and this was especially related to the daily experiences of teaching and learning. Our work was carried out under the Ministry of Education's contract for professional development related to the implementation of the new curriculum document, *Te Whāriki*, which itself is both an outcome of and a contributor to historical and political changes in educational thinking.

It can be difficult for a teacher to change his or her *modus operandi.* Wells (2001) described his own efforts in coming to terms with his tendency to maintain his control of the direction of children's learning, even though he was committed to co-constructed meaning-making. In reviewing a videotape several years after the event, Wells was "mortified" to realise how much he had guided the two children to follow his own agenda. Of particular interest to my own argument for co-construction and scaffolding as metaphors that guide interactions, is Wells' description of his interactions following his own agenda as "scaffolding" the children's learning (pp.89, 91), compared with his use of the term "co-construction", when he is talking about meaning-making based on knowing the children's "interests and abilities" (p.94).

Teachers have trouble learning to guide rather than to control children's behaviour when attempting to change from traditional teacher-controlled whole-class activities to co-operative learning activities (Rogoff, 1998). Johnson and Johnson (1987), Rogoff (1998), and Sharan and Sharan (1992) discussed the importance of teachers themselves being involved in similar ways of working with each other to the ways advocated for them to work with children, in contrast to being lectured at; this is what the teachers

involved in my research programme had the opportunity to do. In co-constructing meaning, issues of power and agency are important. Adults in our dominant society hold the power and agency; minority cultures and children can only have them if we allow it. It takes time to develop a community of learners (Konzal, 2001) in which the children know that they do really share the power and agency.

3.1.1 Whole team professional development

Research clearly indicates the importance of involving the whole teaching team in any programme of professional development that holds the expectation of major and long-lasting change in outcomes for children (Bradley, Conner & Southworth, 1994). Hargreaves and Fullan (2000) made several points regarding the need to view all mentoring projects as aspects of an integrated overall "policy and practice that are required to transform the teaching profession" (p.54). If mentoring programmes are to make a lasting difference, according to these authors, a major requirement is that all involved in such projects need to see themselves as effective change agents, working to build strong professional cultures dedicated to the improvement of teaching, learning and caring; further, mentoring needs to address the needs of all teachers in the team. These imperatives were important in my project as I worked with several older teachers alongside some quite young graduates to address new ideas for practice that promised to change quite dramatically the ways in which they worked with children.

When the desired outcome of the professional development is a major and sustained change involving an aspect of teaching that affects the whole team, as is the case in this study, then the whole team needs to be involved in the professional development, at some level and preferably fully and from the outset. Studies have confirmed the necessity of team commitment to a project, if it is to have a long-term outcome; in a school setting, it has been said, "Synergy is necessary for a well-functioning team to work. Schoolwide implementation of common goals is a long-term synergistic task..." (Bellanca, 1996, p.32). Hitt (1998) described the characteristics of a well-functioning team as: common agreement on high expectations for the team; a commitment to common goals; assumed responsibility for work that must be done; honest and open communication; common access to information; a climate of trust; a general feeling that one can influence what happens; support for decisions that are made; a win-win

approach to conflict management; and a focus on process as well as results. As reported from experiences in New Zealand (Jordan & Collins, 1995; Nally, 1995) teaching teams need to be at least at a minimal level of training, with sufficient professional development experience and with appropriate administrative support and working conditions, to be able to benefit from such an in-depth examination of their current practices and planning processes.

3.1.2 Motivation for teacher involvement in the action research programme of professional development

Fullan (1991) asks, "Why would teachers engage in professional development?" (p.318). Stepping out of familiar ways of doing things can be costly, in time and energy and may not necessarily lead to improvement. Innovation can be threatening, especially to others in the setting not fully engaged with the change; and any change may not be lasting. The bottom line is that change, development and improvement in teaching are facts of life. Staff and professional development mean change and change requires staff and professional development. "There is no single strategy that can contribute more to meaning and improvement than ongoing professional development...successful staff development...like successful change, requires great skill, sophistication and persistence of effort" (Fullan, 1991, p.316). Over a 10-year-period Fullan identified reasons for the failure of many programmes of professional development: one-shot workshops are widespread but ineffective; topics are frequently selected by people other than those for whom the in-service is intended; follow-up support for ideas and practices introduced in in-service programmes occurs in only a very small minority of cases; follow-up evaluation occurs infrequently; in-service programmes rarely address the individual needs and concerns; the majority of programmes involve teachers from many schools and/or school districts, but there is no recognition of the differential impact of positive and negative factors within the systems to which they must return; there is a profound lack of any conceptual basis in the planning and implementing of in-service programmes that would ensure their effectiveness (p.316).

The type of professional development used in this thesis attempted to counter each of the issues identified by Fullan. The whole centre team (or sub-team in a large centre) was invited to engage in an in-centre programme, addressing topics related to

topics that arose during the professional development were addressed within the immediate environment in which the teachers were working, while the practical day-to-day planning and implementation for specific children were the focus for ongoing reflection and further planning.

In centres that already offer quality programmes, motivation for teacher change is intrinsic to both the individual and to the team of teachers; it is also more likely to be related to teachers' intentions to relate updated or new theory to their practices with children, than to a perceived need to meet standards required by an external body (Farquhar, 1999a,b). Such was the case for at least three of the case study centres in this research, where teachers had become aware of newly publicised sociocultural theory and sought support in implementing changes in their programming. David (1996) discussed the natural transition of early childhood teachers, working in teams in centres, to these same staff members carrying out research in teams. "By seeing research as part of the process by which we understand our work better and are able to improve our practice, we are also making our professional lives far more challenging and rewarding" (David, 1996, p.55). According to David, action research is the ideal process through which teachers are able to come to see themselves as researchers, as they develop their skills of reflection on their programmes and practices. My equating of action research with the co-construction of understandings (Table 3.1) makes these links between research and practice more explicit.

Before any researcher may embark on helping to develop others' education, she must first develop her own; and she must honestly attempt to understand the processes and experiences and share those understandings with others. It is only through self-knowledge that we may hope to know others and it is only through a commitment to professional development that we can hope to improve the quality of education in our own centres and classrooms. Teacher-researchers need to be willing to learn from their mistakes as Wells (2001) did, even several years after the event, through analysis and graduate student critique of his own interactions with children as recorded on video. As Newman (1987) reminds us, we should also be open to being surprised at any mismatch between our expectations from our planning and outcomes in practice for our students, and to learn from examining our assumptions that led to such mismatches. Throughout this report, I address the changes in my own thinking as the teachers and I struggled to

make links between sociocultural theory and their practices. In effect, we held mirrors to each other's reflection on beliefs, theories and ideas for practice.

3.1.3 Range of approaches to professional development

Staff development is a major commitment in teaching generally, given that newly graduated teachers yet have much to learn about teaching and that experienced teachers need to assess their practices continually in order to update themselves about current theoretical approaches. Many approaches to staff development, or professional development, exist and some useful reviews have been written on these, such as Sparks and Loucks-Horsley (1990).

Three planes of professional development

In keeping with the sociocultural basis of this thesis, I apply the concepts of three planes of interaction that Wertsch (1985b), Rogoff (1998) and Fleer (2001) have applied to learning situations, to a discussion of a range of approaches to teacher professional development. The ideas of these three planes – the personal, the interpersonal and the community/institutional – being mutually constitutive of each other and of being able to background two planes while focusing on the foregrounded one, are useful throughout the processes of professional development. For example, a teacher involved in personal professional development in the form of undertaking higher degree studies will be gaining qualifications for herself. However, it is very likely that understandings developed in her current degree papers will be applied to the professional development focus of her teaching team, the latter professional development taking place largely in the interpersonal plane. Reciprocally, the team's programme of professional development is likely to be applied in some way within this teacher's degree studies. The term "spiral reciprocity" (Salomon & Perkins, 1998) aptly describes such mutual influence between planes, and the analysis of some examples of spiral reciprocity was useful in my research. Acknowledging such possibilities of multiple planes of professional development for teachers was important in any claim for change in teachers or in their centre programmes as the result of their work in this project.

Examples of professional development in the personal plane

Professional development in the personal plane is focused largely on development for the individual teacher. Examples here include: clinical supervision, life histories and narratives (Connelly & Clandinin, 1988); technical skill development; teacher-centred or student-centred reflection; individual reflective and action research practices (Elliot, 1995, 1982, 1991; Fullan, 1991; Schon, 1983; Kemmis & McTaggart, 1988). Many early childhood centres allocate funding for professional development with a certain percentage for individual and team development. In this system there are sometimes also links between these activities, as each teacher identifies her/his own requirements for professional development for the year, and the parent association attempts to provide for these needs within their programme offered to all member teachers (Graham & Spackman, 1993). Through developing her/his own annual plan for professional development, the teacher accepts responsibility for her/his own professional development coherence and s/he seeks opportunities for carrying through these plans, by undertaking further study, attending courses or reading professional journals. At times, during the research reported here, a teacher's individual professional development was brought into clear focus in the group in which s/he was reflecting on centre practices.

Examples of professional development in the inter-personal plane

Professional development in the interpersonal plane will focus either on teachers working together in their professional development and/or on teachers working on aspects of their interactions with others, notably with children. From both perspectives, the participants in this research were engaged in professional development in the interpersonal plane. Examples in this plane include: peer and cognitive coaching strategies (Sparks & Loucks-Horsley, 1990; Joyce & Showers, 1982); structured interviews (Trumbull & Slack, 1991); and training in the form of traditional workshops, as well as collaborative action research. Interviews and workshops were used at various points in this research, though the major type of research could be adequately described as collaborative action research.

Examples of professional development in the institutional/community plane

Professional development in the community/institutional plane involves examination of practices at this level and preferably it involves the full team. Types of professional development relevant in this plane will include reflective and action research practices of inquiry and collaboration; organisation-development and the change process models; and curriculum-centred and school-centred objectives (Elliot, 1982; Fullan, 1991; Kemmis & McTaggart, 1988; Schon, 1983). Fullan (1991) maintained teacher education should foster the development and integration of several aspects of teacher effectiveness, critical reflection, inquiry and collaboration. My contention is that professional development will be effective in the long-term only when all three planes are addressed to ensure that relevant aspects in each plane contribute to supporting the proposed changes.

In the complexity of a busy early childhood centre, most teachers would engage in many models of teacher development over a period of time. While the foundational model for my own professional development work with teachers was that of collaborative action research, elements of each of the other models were also incorporated into my work with a teaching team as seemed appropriate to the teachers' programme needs. I view action research as potentially catering for the depth of planning, reflecting and implementing change within a climate of critical evaluation; however, these processes can only be enhanced by attention to the literature of the above models. Teachers are usually engaged in their own professional development, in addition to their contribution to the centre's action research project and this individual teacher development may or may not be directly related to that of the whole-team work. I needed to keep this variety of support for teacher development in mind when making any claims for change in the teachers with whom I was working as being the result of my work with them.

3.2 COLLABORATIVE PROFESSIONAL DEVELOPMENT

The process of teacher change is a complex one, though this may not be apparent in models of teacher change that imply that it is a simple process of identifying needs, planning action, implementing the change and, thereby, changing the practice. The

model of action research adopted in this report is an eclectic one, utilising a variety of approaches to professional development in response to the team's or the individual teacher's current interests and areas of development and in response also to the critique of action research itself, as discussed below (Section 3.3).

The key aspects of professional development considered here are the use of collaborative action research and the use of reflection on practices.

3.2.1 Collaboration/collaborative research

In action research, collaboration includes that between the teachers and their communities and may also include collaboration with an "outsider", usually a member of a tertiary institute such as a university educator. In the latter case, special attention needs to be paid to the relationship between the action research teachers and the action research facilitator, who is always to some extent an "outsider", at least in terms of being a practitioner in the centre programme. Stenhouse (1985) wrote of the difficulties involved through the teaching team remaining dependent on the facilitator(s) for advice and decision-making:

> A games player often uses a coach, who is in effect a consultant observer. Similarly, a teacher may...invite an observer into his classroom (though)...some adjustment is necessary because within the tradition the teacher is usually seen as the object of the observation and not as a co-worker with the researcher. (p.158)

Smyth's (1991) "four moments of reflection" have been especially useful in my four case study centres, providing the key questions: *what is happening?* (description); *where did it come from?* (information); *what does it mean?* (confrontation); and *what and how will we change it*? (transformation). The teachers and I found these questions encouraged the linking of theory and practice in the context of identifying the historical antecedents of each centre's current practices. Having identified the sources of their beliefs and practices, teachers were then in a position to challenge dominant practices and to reconstruct their centres (Smyth, 1991). Smyth's four moments fit well into the

action research cycle, where they are used collaboratively by teams engaging in ongoing critical reflection for change in their practices.

Changing teacher beliefs in the interests of improving outcomes for children was one of the key aspects of recent research in Otara and Mangere in South Auckland, New Zealand (Phillips, McNaughton & MacDonald, 2001). This research programme aimed to provide information on the effectiveness of professional development for both early childhood and primary school teachers, on children's achievements after a year at school. Early childhood teachers' engagement in professional development led to statistically significant higher achievement for Maori and Pacific Island children in their later school literacy and receptive English language measures, as compared with children who had been in early childhood centres without teachers engaged in this professional development. These advantages for the children in the early childhood intervention groups were maintained even when these children went into school classrooms where the teachers had not been involved in the professional development. Here is evidence of the effectiveness of teachers engaging in professional development which was "underpinned by a co-construction view of learning and literacy as social practices" (p.7) based on the sociocultural paradigm, during which teachers changed their beliefs about learning and literacy and considered mismatches that occur during early instruction.

3.2.2 Reflective activities

Reflective activities seem to increase teachers' self-esteem (Pultorak, 1993), a vital aspect of teacher efficacy and performance (Gibbs, 1996). An important role of the facilitator in each centre is to affirm current practices and procedures that are positive, while encouraging reflection on practice. Particularly because such a variety of qualifications and training exists in many centres, each staff member needs to have her particular input valued. Ascertaining the source of a teacher's inspirations in her scaffolding of children's learning is an important aspect of supporting her reflection on practices. In the words of Noori (1996):

> There are theories, techniques, strategies and attitudes that teachers must possess to effectively provide instruction. But a knowledge base alone is not

> enough. Teachers must also reflect on the set of circumstances that is unique to her/his classroom and make decisions based on their own research and monitoring...as they uncover their own beliefs, concerns and actions, quite likely they will bring their own identity into focus. This emerging sense of self facilitates their ability to engage in more reflective practice and helps them to make sound and ethical decisions about children's development and learning. (p.19)

In my work with the four centre teams we moved fluidly between examination of current practices with a view to improving these, discussions on beliefs about these, and ideal practices. Each teacher was encouraged to locate her professional development work within the larger picture of the influences of her own upbringing and life experiences, combined with teacher education programmes and teaching experiences, and all of these were set within her own culture and that of early childhood in New Zealand.

3.3 ACTION RESEARCH

Action research is concerned with theory generation. The legitimisation of action research is the derivation of findings and their application to the local situation in which the study was carried out. "Action research has the potential to empower participants...(with the centre staff) in control of the process – identifying what is to be observed, interpreting data, planning and implementing new approaches and reflecting and evaluating on the quality of their programme" (Foote, Irvine & Turnbull, 1996, p.39). In their action research with the Ministry of Education, Carr, May and Podmore (1999) were committed to collaboration, on a small-scale national level, to trial their framework for curriculum assessment and evaluation. A key to this framework was the support of teachers by an outsider facilitator, as they learned to hear the child's voice and questions, in working to implement their version of the New Zealand national Early Childhood Education curriculum document, *Te Whāriki*. The research phase, based on Kemmis and McTaggart's (1988) action research planner, encouraged teachers to choose a child's question and then to select, adapt, or devise "a self-evaluation action research tool for gathering data. Then they observed, reflected, planned and acted (in varying order)" (Carr, May & Podmore, 1999, p.v). An earlier project led by May and

Podmore had also used the pattern for a collaborative and grounded approach to research in New Zealand early childhood (May, Podmore & Mara, 1997) that had been established with the preparation for the writing of the draft of *Te Whāriki* itself (Ministry of Education, 1993). Both these projects engaged in extensive negotiation and collaboration on a national level, utilising focus discussion groups in various locations and action research for professional development. As Carr, May and Podmore (1999) report:

> ...although many centres trialled tools that had been originally devised by the project directors and researchers, the process was not 'top down'; increasingly the staff...took the process over, adapted the tools and rejected those tools that did not seem to provide data that enabled them to reflect directly on the programme's response to the children's questions. (p.52)

Leading early childhood researchers in New Zealand have thus provided demonstrations of the use of action research in the development of both a curriculum document and tools for programme assessment and evaluation in its implementation. Action research is an approach to improving education by making a change in practice and learning from the consequences of the change. It is participatory, as people work together toward the improvement of their own practices. It develops through the self-reflective spiral, a spiral of planning, acting (implementing plans), systematically observing, reflecting and then continuing this cycle. It is collaborative, involving those responsible for the programme in improving it. It establishes self-critical communities of people participating and collaborating in all phases of the research cycle and who are committed to enlightening themselves. It is a systematic learning process, in which people act deliberately, though remaining open to surprises and responsive to opportunities (Kemmis & McTaggart, 1988; Lomax, 1995). As expressed by Elliot (1991), "The fundamental aim of action research is to improve practice rather than to produce knowledge. The production and utilisation of knowledge is subordinate to and conditioned by this fundamental aim" (p.49).

3.3.1 Limitations of the action research methodology

The utilisation of the action research model presupposes the ability of all participants to reflect on their own practices, "able to articulate/describe practice and analyse this information against some baseline or criteria...(in a climate where)...effective problem-solving skills exist or can be developed among the people in the setting" (Nally, 1995, p.3). Several factors contribute to the absence of these abilities in many early childhood services, in particular that many staff members in childcare services are unqualified, and providers of qualifications are of a very wide variety. Skilled facilitators of professional development programmes need to vary their approaches and styles of delivery to empower teams to remain in charge of their development of curriculum planning, while challenging them to consider further possibilities. While many centre teams that are adept at maintaining their own challenges have sought support for making significant changes in their programmes for children, through the implementation of *Te Whāriki*, other teams have been somewhat complacent about their current procedures and have sought to use *Te Whāriki* as a tool to prove that they are, in fact, "already doing it all" (Collins, 1996).

Not all centre teams are able to commit themselves wholeheartedly to action research and to change. Teachers, parent and management teams and individual members within them are at varying levels of understanding of the provision of curriculum in early childhood generally, of *Te Whāriki,* and of possible implications of these for working in early childhood. Verstappen (1997) found that stress management, time management, relationships with colleagues and parents/children, record keeping, appraisal, seeking promotions, budgeting and managing resources, were important influences on teachers, alongside professional development related to curriculum content and delivery. Such factors, contributing to different levels of teachers' basic understandings and willingness to engage in debate about their curriculum provision, present challenges for deliverers of professional development programmes. All participants need to be challenged and extended without being overwhelmed by information and ideas. In catering for the requirements of all teachers in a team, facilitators require sensitivity to each teacher's stage of professional development and the knowledge and ability to work with a variety of models, as identified by many writers and facilitators, such as Collins (1996), Jordan and Collins (1995), Lidington (2000), Nally (1995) and Noori (1996).

My research sought to identify the factors that were present in those centres that enabled the participating teams to change some of their practices, for the benefit of children's learning.

3.3.2 Insider/outsider roles in research

Poskitt (1994) discussed the insider-outsider relationship as one of the contradictions in action research. The purpose of action research is to empower each teacher to undertake her own research; the role of the outsider in this process is to support such endeavour. However, due to the perceived roles and expertise of both the university researcher and the teacher, there could well exist an unequal balance of power between the participants from the outset of the research. Teachers are generally more concerned with the daily practicalities of their students' lives and of their own interactions with them, with what Graue and Walsh (1998) call the "little-t theories"; university researchers have more access to and work at the level of the "big-t theories" and the universal application of these to the classroom. Teachers have traditionally rejected the research literature as irrelevant to their practices.

Hatherly (1999) studied organisational culture in an early childhood centre in New Zealand, using the case study and ethnographic methodologies. In her reflections on the "outsider approach", Hatherly identified several tensions in her research, describing the centre staff as having quite a different perception of the proposed outcomes of the research to her own, even by its conclusion. The centre teachers did not hold to the same issues as the researcher did; the problems they were interested in were much more tangible, practical, day-to-day and they never shared the passion of the researcher for what had become "her topic". Regardless of the effort of the researcher in gaining the teachers' trust and acceptance, there remained sensitive issues on which she "had to be satisfied with indirect reports of events" (p.8). Because of her familiarity with the culture of the centre, Hatherly found that it was sometimes a struggle to remain sensitive to the "ordinary" and therefore to "have a fairly sophisticated level of reflective consciousness" (p.8). The centre's "strong practical culture" made it difficult to interest the teachers in a more theoretical investigation, of organisational culture, or even of decision-making. Hatherly suggested these teachers regarded meeting with

compliance and regulations very seriously and that this was where their efforts towards providing quality programmes lay. Hatherly's study raises issues about the ability of the sector to raise its quality, when this is dictated by outside requirements over which teachers have no control (see also Farquhar, 1999a,b). In my study I needed to work with the focus of one of the centre teams, which remained firmly on meeting the requirements of their recent Education Review Office report.

My current study emerged from my roles both as one of the facilitators and as the Director of the 1996-98 Professional Development Curriculum Contracts between my University and the New Zealand Ministry of Education. In these contracts, facilitators used the most relevant aspects of models of professional development for the particular group and on the particular topic of change. In fact, the process of supporting a centre team in making change may be viewed as a model of co-constructing learning with these adults; from the outset the research is a joint venture between the facilitator and the teaching team, or as many of them as are able and willing to join the research. My experiences of working with centre teams is that when the group seems to require a large amount of support, ways of providing this are negotiated; as the group becomes more confident in its own processes, the facilitator may become superfluous.

In the model used in this study, professional development and research were closely linked. This research is not a report on some professional development outcomes for a few centres; the research in each centre *is* the professional development. Researcher and centre personnel, including staff and sometimes management members, together identified their issues and jointly constructed programmes of investigation. The research report for each centre was jointly negotiated between all participants; patterns (of interaction, change, processes and variables) identified within each centres have been discussed with the centre personnel concerned and amendments made where applicable.

3.4 SOCIOCULTURAL LEARNING IN RESEARCH

Consistent with theories that acknowledge the social-historical-genetic approach to children's learning, my understanding of a programme of professional development is that it needs similarly to acknowledge the total environment in which it is to take place. The same principles of supporting children's learning addressed in Chapter Two are

equally applicable to the professional development of adults. To be long lasting and effective, research needs to be co-constructed amongst all participants; it needs to be conducted within the zone of proximal development of the group members and it also needs to address the three planes of activity: the personal, the interpersonal and the institutional/community planes, in order to effect change. Working co-constructively within teachers' zones of proximal development implies an emphasis on the genetic (developmental) method of research.

3.4.1 The application of the zone of proximal development to research

The application of the zone of proximal development to research has a considerable influence on the whole process of research. Any researcher working with a teaching team will fulfil the role of an "expert" in the research process, working with the teachers who are the "experts" in their own centres. Together the teachers and the facilitator working in the sociocultural paradigm will co-construct their research, each extending the others in their zones of proximal development, each going further than they could have gone alone. In examining the unit of analysis in psychological research, it is inappropriate to attempt a measure of the fully developed state of development, independently of the goal-directed, tool-mediated activities that occurred within a social milieu, during its production. To Vygotsky, the very process of learning to use the mediational tools, in the ways considered most appropriate by the researcher, was of infinitely greater theoretical importance than the final level of knowledge, which is often measured in psychological research. It is therefore important for the action research facilitator to ensure that each member of the teaching team understands the ongoing processes of the professional development, and that all engage with articulating current practices and reasons for any proposed changes.

It is impossible for a researcher to conduct research on developmental processes in a sociocultural setting, without becoming a part of that setting and thereby also becoming mediating factors in the very learning they are attempting to measure (Smagorinsky, 1995). This mediation effect of the researcher cannot be culturally neutral and needs to be acknowledged as replete with cultural values, representing cognition that is socially distributed (Salomon, 1993). The action research facilitator of the programme of professional development needs to check constantly that the teaching team's

understandings of both the topics of discussion and the potential implications of these for their practices are in accord with hers/his. In effect, the teachers and the facilitator need to co-construct their understandings of the outcomes for themselves, and for children, of specific processes and interactions.

Wells (2001) and his colleagues at the Ontario Institute for Studies in Education at the University of Ontario have reported on outcomes for the teachers, researchers and children of their ongoing and extensive collaborative research programme. In what the group itself came to call the Developing Inquiring Communities in Education Project (DICEP), university researchers and teachers, since 1991, have sustained their sharing of their individual action research on their own teaching. The group works within the common framework of sociocultural theory with a focus on spoken and written discourse. In their many research activities, these researchers have become ever more committed to the importance of "real" questions for both themselves and their students. In DICEP's social constructivist approach to education, learning is viewed as "an integral aspect of participating in a community's activities and mastering the tools and practices that enable one to do so effectively" (p.189). As Dewey, in the early 1900's, practised in his experimental school (Dewey, 1938; 1976), so is it appropriate in educational programmes based on sociocultural theory to involve students in work that engages their real interests and extends their current understandings. Student growth in understanding in this paradigm is seen as knowledge growing out of shared social experiences and productive action (Cohen, McLaughlin & Talbert, 1993). The choice of experiences is such that they engage students' interests, feelings and values and are open enough to encourage several possibilities for consideration, while also challenging current understandings. The student must really care about making an answer to the questions generated, and learning is about collaborative inquiry in action and interaction. Whether generated by teacher or student, the student needs to take the investigation over and "own" it, if there is to be motivation for genuine inquiry (Van Tassell, 2001). The same principles apply for teachers engaged in collaborative action research; the questions about teaching must be owned by the teachers themselves.

In their two-year preschool research project, Anning and Edwards (1999) used the community of practice model in a programme of professional development aimed at supporting young children's learning. Practitioners in a variety of settings were

supported by the researchers and their local authority senior managers to identify their concerns about supporting children's developing numeracy and literacy. The processes of learning collaboratively how to improve teacher:child interactions in these areas of children's learning, developed a "community of understanding" amongst these people, who came from quite disparate settings: "day care, nursery schools, local authority special initiatives, child-minding and a work-based nursery at a local hospital" (Anning & Edwards, 1999, p.37). In Anning and Edward's project, it was important that all proposed changes were based on the participants' own carefully documented evidence of "staff and children working together in authentic contexts and under the real constraints of the hectic nature of working in pre-school settings" (Anning & Edwards, 1999, p.93). However, "again and again we returned to the notion of the significance of the quality of interactions between adults and children and adults and adults in the workplace as at the heart and soul of good professional practice" (p.166).

3.4.2 Links between co-constructed learning and action research

From a sociocultural perspective, Wenger (1998) used the term "communities of practice", where practices are the outcomes of people interacting with each other in a variety of pursuits, tuning relations with each other and with the world. Such common activities lead to learning and result in practices that reflect both our enterprises and the attendant social relations. Where sufficient mutual engagement is present in a community, significant learning can take place and the "community of practice can be thought of as shared histories of learning" (Wenger, 1998, p.86). This learning may be at the level of acquisition of knowledge, where newcomers are given access to developing competence and identity with the community's practices, or, in a well-functioning community, radically new insights could be explored in leading-edge learning, where knowledge can be in the process of being created. During the action research programme reported here three of the four centres involved were working at the leading edge of implementing a programme based on sociocultural theory of learning. This report identifies some of the factors that contributed to these communities functioning so well they were able not only consciously to create new knowledge, but also, in one case, to take the next step of disseminating their new understandings amongst their peers.

Central to sociocultural theory is the co-construction of learning. The principles of co-constructed learning as developed for adults working with children, are summarised here from the discussions in Chapter Two, where they are discussed more fully. Co-construction includes:

- Knowledge being gradually constructed by people hearing each other, participants maintaining intersubjectivity and honouring each other's perspectives (Vygotsky, 1934/1986; Wertsch, 1985b).
- Participant reflection on each other's ideas, while negotiating for a better understanding of the topic, using skills of design, documentation and discourse (Forman & Fyfe, 1998), or "forming meaning and building knowledge about the world with each other" (MacNaughton & Williams, 1998, p.177) as each engages with the body of knowledge of the others.
- Believing that meaning-making is more important than fact-gathering, as people involved in meaningful interactions "synthesise knowledge from disparate opportunities and construct further learning opportunities" (McNaughton, 1996, p.5).
- That individual learning may be more or less socially mediated; that what is learned might be distributed amongst the collective more than in the mind of any of the individuals within that collective (Cole & Engestrom, 1993).
- That the metaphor (Bruner, 1986) supports understandings.

In co-constructing meaning, issues of power and agency are important as roles become seen as mutual and reciprocal in initiating and managing the shared interactions. Thus, co-construction is:

- An interaction strategy that emphasises the learner as a powerful player in his/her own learning, "rich in potential, strong, powerful, competent and linked to other learners (Malaguzzi, 1993, p.10).
- Developed over a period of time as a group becomes a community of learners (Konzal, 2001).
- Individual and social learning interacting over time to strengthen one another in a "reciprocal spiral relationship" (Saloman & Perkins (1998, p.18). This idea of spiral reciprocities between the different planes of learning is especially supportive of the concept of co-construction of understandings across space and

time. Collaboration occurs "amongst people of different eras and locations" (Rogoff, 1998, p.726).

- The individual and the physical and social environments contributing to the construction of knowledge and understanding (Ministry of Education, 1998, p.86); and
- The use of artifacts such as "books, videos, wall displays, scientific equipment and a computer environment intended to support intentional learning" (Brown, et al. 1993, p.191).

3.4.3 Action research equated to co-constructed learning

Note the similarities in language between the above co-constructive principles and a definition of action research, as defined by Kemmis and McTaggart (1988):

> Action research is a form of ***collective*** **self-reflective inquiry** undertaken by participants in **social situations** in order to improve the rationality and justice of their own social or educational practices and the situations in which these practices are carried out.....The approach is only action research when it is **collaborative,** though it is important to realise that the action research of the group is achieved through the ***critically examined action*** of the **individual group members** [italics in the original, my bolds] (p.5).

Further similarities are found between co-constructive principles and Borgia and Schuler's (1996) description of action research as being composed of five C's: commitment, collaboration, concern, consideration, critical assessment of one's own behaviour and change. Both co-construction and action research involve collaboration, self- and collective-reflection and inquiry and critique of current activities. Table 3.1 makes explicit the links between processes of action research and co-constructing learning.

Table 3.1 Links between processes of action research and co-constructed understandings

Action research	Co-constructed understandings	Linked Outcomes of change (Borgia & Schuler, 1996)
Collective self-reflective inquiry (Kemmis & McTaggart, 1988).	An interaction strategy that emphasises the learner as a powerful player in his/her own learning, "rich in potential, strong, powerful, competent and linked to other learners (Malaguzzi, 1993, p.10).	Concern: Empowerment of individual learners, linked with other learners.
Critically examined action of the individual group members (Kemmis & McTaggart, 1988).	Participant reflection on each others' ideas, while negotiating for a better understanding of the topic, using skills design, documentation and discourse (Forman & Fyfe, 1998), or "forming meaning and building knowledge about the world with each other" (MacNaughton & Williams, 1998, p.177) as each engages with the body of knowledge of the others.	Consideration: Engagement with others' ideas and actions.
A "reciprocal spiral relationship" (Saloman & Perkins, 1998).	The individual and the physical and social environments contributing to the construction of knowledge and understanding (Ministry of Education, 1998).	Attention to all planes of activity and the relationships between them.
Borgia and Schuler's (1996) commitment, collaboration, concern, consideration and change.	Knowledge being gradually constructed by people hearing each other, participants maintaining intersubjectivity, honouring each other's perspectives (Vygotsky, 1934 / 1986; Wertsch, 1985a,b).	A commitment to collaboration and change.

Action research, then, is an appropriate choice of methodology for a researcher holding a social constructivist theoretical perspective. The very strong links between sociocultural theory and action research enabled me to assure teachers that the interaction skills I was attempting to model with them, were just as relevant for their work with children. Teachers were enabled to practise with the children with whom they worked, in interactions very similar to those we had previously practised in our adult group sessions.

3.4.4 Data generation in sociocultural research

All data collection occurs with a culturally biased sense of telos in mind, which is reflected in both data collection methods and in the uses of these data as evidence in the arguments of the research results (Smagorinsky, 1995, p.201). Thus, most assessment

procedures in the educational system, including research, advantage students whose higher mental processes have developed in ways understood and esteemed by the creators of the assessment procedures. "Data...are social constructs, in that the means of mediation are necessarily sociocultural in nature" (p.203).

Smagorinsky proposed that research results are valid only when the learner is consonant with and can appropriate the mediational means of the research as useful cultural tools and when the researcher takes into account the learner's appropriation of the research tools when finding evidence for a claim. In this conception, valid research is inherently instructional in that the congruence of learner and learning materials affords development (Smagorinsky, 1995, p.204).

In accordance with Graue and Walsh (1998) I prefer the term "data generation" to "data collection", in that:

> data are not out there, waiting, like tomatoes on a vine, to be picked. Acquiring data is a very active, creative, improvisational process. Data must be generated before they can be collected. If research is the process of soaking and poking, we emphasise the poking over the soaking, or better, first poke and then soak. The researcher is not a fly on the wall or a frog in the pocket. The researcher is there. She cannot be otherwise. She is in the mix (p.91).

3.4.5 Questions relevant to the sociocultural paradigm

Particular questions are appropriate to the sociocultural method as a process of intervention, and Rogoff (1998) discussed the different types of research questions under either the sociocultural or the social influence paradigms. Where the social influence model has typically led to research on the individual, standardising social influences on outcomes for the individual, the questions of sociocultural research are related to the learning of individuals as they participate in ongoing sociocultural activities. Central questions in the participation view deal with how people's roles and understanding change as an activity develops, how different activities relate to each other and how people prepare now for what they expect later on the basis of their prior

participation. In this view of research, the focus is on how participants work together to share and extend their common understandings and how both participants and the activities in which they engage change as a result. In our facilitated action research, the teachers and I were engaged, first, in developing common understandings, from our different perspectives about the interactions that best support children's learning, and second, in implementing change as the result of this engagement.

To apply the language of sociocultural theory to professional development, teachers in this research were supported in identifying and developing their use of tools and signs that mediated their practices. They examined their language and dialogues, (signs), their planning processes and use of equipment and routines, (tools) in terms of current outcomes for children and potential change for improvement in the light of current theory. In doing so, neither the facilitator nor the teachers were bound to any particular overall outcome or ultimate level of development; what Smagorinsky (1995) referred to as the "telos" of research. Further, every aspect and influence on a centre's operations and influences on these, was open to scrutiny for their effects on outcomes for the children; this included national, regional and service expectations, management and administrative freedoms and restrictions, teacher working conditions and in particular for my current research, teacher-child interactions. In short, applying the sociocultural model to professional development meant any aspect of quality programming was open to the scrutiny of a teacher or teaching team (Dahlberg, Moss & Pence, 1999). I argue that this type of professional development is so involved it can only be effective in the long term when it is co-constructed with the whole teaching team, as well as when it addresses all three planes of interaction, the personal, the interpersonal and the community or institutional.

3.5 THE CASE STUDY METHOD

My research was conducted in four case study centres, overlapping chronologically but with some elements of the progressively focusing method involved.

3.5.1 The case study and qualitative research

The case study method of research was particularly applicable to my qualitative research. Kemmis and McTaggart (1988) and Elliot (1982) all suggest the report of the action research project should be a "case study" of the process of the work, basically in narrative form. Case studies are "typically eclectic and combine some of the elements of ethnographic research, programme evaluation and descriptive methods" (Anderson, 1990, p.112).

The selection of the particular case is an important issue. Selection on the grounds of representation of a larger group is hard to defend, given the complexity of each case and the lack of generalisability across cases. The first criterion for case selection is to maximise what we can learn, deciding which cases will lead to understandings, to assertions, or even perhaps to modifying generalisations. A case need not be chosen as a typical one and even the choice of multiple cases from a large selection is unlikely to include sufficient multiple variables to be considered suitably representative. The strength of a case study is the contribution of many "voices" as sources of evidence (Schratz, 1993, p.183; Winter, 1989; Yin, 1993). In choosing four case study centres for this study, my intentions were to provide a variety of situations and experiences that would support the generation of patterns of interaction within and between centre variables.

Data generation in both action research and in case study is likely to involve techniques of observing, interviewing and collection of documents and records, plus a wide range of other possibilities such as questionnaires, life histories, role playing or tests or scales. However, not all key features of most case studies fit my purposes, as in one feature from Wellington (2000) that identifies that a case study "does not attempt to control events or intervene" (p.100). The teachers in my case studies were specifically involved in professional development with the expectation of change.

3.5.2 Levels of generalisations in the case study

The real business of the case study is not generalisation but particularisation; we take a case and come to know it well, in all its complexities and richness. The emphasis is on

uniqueness, on understanding the case itself; and, while this implies knowledge of difference from other cases, the focus is on the meanings and understandings of the case under study. However, because each centre belongs to the community of early childhood centres in New Zealand, an in-depth case study of one centre will very likely contain important messages for members of another early childhood centre, especially another centre in New Zealand. Eisner (1991) identified that one of the major values of qualitative case studies is that they encourage refined perception of actual activity and dialogue between participants about this. Eisner also noted that a case study becomes generalisable when readers relate to the report and make connections with their own contexts.

Progressive focusing in case study is discussed by Stake (1995) as describing the process of changing the design of the study, if necessary, as new issues in the case become apparent This is especially true of multiple or collective cases studied in sequence; the researcher applying learning from the first case study in subsequent cases, each benefiting from the previous work of the researcher. A collective case study involves several cases from which common characteristics may or may not evolve as the study progresses (Stake, 2000). Individual cases are chosen because it is believed that coming to understand them will lead to a better understanding of, or perhaps better theorising about, a larger collection of cases.

3.5.3 The role of the case study researcher

The role choices that the researcher makes include teacher, advocate, evaluator, biographer and interpreter (Stake, 1995). These roles require decisions about how much to participate personally in the activity of the case, how much to pose as expert, how much comprehension to reveal, whether to be neutral or evaluative, how to be a critical analyst without assuming power, how much to try to serve the needs of anticipated readers, how much to provide interpretations about the case, how much to advocate a position, whether or not to tell a story, and most important of all, how much the researcher will be herself (Stake, 1995). No one role is clearly better than others, though those chosen will have implications for the study. Because my research combined the case study method with collaborative action research, several of these roles were important in my work with the teachers.

I committed at the outset to remaining at all times as transparent as possible with the teachers with whom I was working, about my own understanding of their work. My process of working with each group began with supporting the participants in identifying their current expressions of their own best practices and encouraging them in their self-set challenges for improvements. The boundaries for this work were set to focus on teacher-child interactions, so one of my roles was to maintain these boundaries or to support the justification of any digressions. I attempted to be myself as much as possible and to not pose as an expert, although because of my position in my university and my wide reading on sociocultural theory, it was at times difficult to convince teachers that I did not have answers to the questions generated in our research. I saw my major role as one of facilitating the teaching teams' own work of developing their programmes and teaching skills, in collaboration with me as their invited professional development facilitator.

3.5.4 Examples of case studies with children

McLean (1991) used the case study method to take readers of her reports inside four preschools, for an in-depth look at the patterns of life for four teachers and the children. McLean explored the observable behaviour; she also sought to understand the meanings the teachers gave to their classroom interactions, especially those in which the teachers became involved with children in their peer relationships. Teachers' previous careers and life experiences shape their views of teaching and the ways they set about their teaching and their lives outside the centre, including their latent identities and cultures, have important impacts on their work as teachers. Teachers' interactions in the early childhood centre are influenced by each teacher's context-specific knowledge base, on their broader beliefs and understandings of their personal, social and cultural/political contexts, as well as on their beliefs about their own effectiveness as a teacher. McLean's (1991) "Image-of-Self-as-Teacher" work sought to capture some understanding of her four case study teachers' opinions of themselves as teachers, in a variety of contexts. It is important that an individual's views are both made explicit and connected to others' views in what then becomes a "shared subjectivity" (Graue & Walsh, 1998, p.30). This shared subjectivity is clearly influenced by current educational theory and practice.

Multiple case study investigation has been a major aspect of recent research in New Zealand, and has contributed to the development of processes for the use and assessment of *Te Whāriki*. In Carr's (1998) research project for the Ministry of Education, "Assessing Children's Experiences in Early Childhood Settings", she worked with five case study centres to develop new and authentic ways of assessing children's progress in the early years. The now popular "Learning Story" approach to assessment in these early years was the outcome of this research project, as well as of the action research trial in a number of centres that specifically addressed the strands of *Te Whāriki* (Carr, May & Podmore, 1999). Case studies of action research are thus well used and many are nationally contracted and reported in the field of early childhood in New Zealand.

3.6 ETHICS OF QUALITATIVE RESEARCH

Ethics refers to a "complex of ideals showing how individuals should relate to one another in particular situations, to principles of conduct guiding those relationships and to the kind of reasoning one engages in when thinking about such ideals and principle" (Smith, 1990, p.141).

Issues of power were especially relevant in my research; not only related to my possible power over the centre teachers as a researcher and university lecturer, but also that issues of power between children and adults were central to my work with the teachers, as the topic of my research.

Insider research poses problems of ethics. In reporting outcomes of even our own research, "dilemmas of responsibility and ownership arise" (Zeni, 2001, p.155). Zeni, Prophete, Cason and Phillips (2001) reported negative outcomes for children in school when their teachers failed to see them as people within their own cultures. Through action research, teachers working with a university facilitator were able to document their own feelings and concerns, as they grappled to change their practices in learning to really listen to the children and to value their input into their classes. In the climate of sociocultural research, I make the claim that a culture of dis-empowering children in their own learning is unethical; a major aspect of my research is the empowerment of

children through the provision of a curriculum that addresses their own interests and strengths, while encouraging their decision-making and autonomy.

The Massey University Code of Ethics includes specific reference to the need for a "multistage consent process", because of the evolving nature of action research and therefore the inability of the researcher to specify a concrete proposal at the stage of research at which ethical consent is sought in other types of research. Because of the impossibility of identifying every potential ethical decision before beginning the research, some advocate "an active and self-questioning" stance in which "qualitative researchers will not and cannot be satisfied with standardised or codified answers to ethical and political dilemmas" (Mason, 1996, p.167). Above all, there is a need to protect relationships of trust with those vulnerable to exploitation, especially teachers in the field and the families and children who attend the institutions with whom researchers from the university would want to continue to be invited to conduct research. My relationships with participants and my commitment to the transparency of my every action are made clear throughout my research report.

Kirsch (1999) suggested three checkpoints on a continuum of ethical issues: "location," "interpretation" and "publication." (p.x), to which Zeni (2001) added a further two, relationships and institutionalisation. Zeni's framework of checkpoints and questions can be seen to address each of the three planes of analysis of sociocultural theory:

3.6.1 Ethical checkpoints in three planes of analysis

The personal plane:

Location: What a researcher brings to the inquiry – gender, race, class, roles and status in the institution. How do these aspects of culture connect or divide a researcher from colleagues, students and other participants?

Interpretation/definition: How the researcher represents the subjective experience of others to consider multiple perspectives. How do various participants define the issues?

The interpersonal plane:

Relationships: The human dynamics, friendships and professional responsibilities that may be threatened or enhanced by the research. To whom is the researcher accountable?

The institutional plane:

Publication: texts, forms and voices that bring the research to a wider public. How does the researcher tell a complex story truthfully and respectfully to varied audiences?

Institutionalisation: Legal and procedural expectations in the university/school, or other setting. What guidelines apply when research involves more than one institutional culture?

(Modified from Zeni, 2001, pp.xvii–xviii)

Such contextual requirements indicate the care with which an outsider researcher needs to approach the research, at its every stage. Attention needs to be paid to such multiple issues of ethics, not only before the start of the research but also at significant points as it unfolds. In my research, a constant question involved the "institutional" issues of power and authority; in reflecting on the five checkpoints above, each of them required constant defining and redefining both for myself and amongst my "community of inquirers". Some of these dilemmas were addressed in the project design (see Chapter Four), others were faced at various stages of my project, notably when one of the kindergarten teaching teams published their own report on their action research,* thereby, themselves destroying any pretence at the anonymity I had promised them and the families and children involved (see Chapter Four for resolution of this dilemma).

3.6.2 Issues of Ethics specific to this study

"Qualitative researchers are guests in the private spaces of the world. Their manners should be good and their code of ethics strict" (Stake, 2000, p.447).

In my role as an educator in early childhood I have been careful to develop a sense of mutual trust and support between academics, researchers, professional development

* The article written by the teachers is not referenced in this report. Any serious researcher is invited to contact the author for access to the reference.

facilitators, university students and practitioners. I value these professional relationships and am very aware that a critical research report could lead to significant damage for an individual, a centre, or a sector. A centre's good reputation contributes to employment opportunities for staff, and financial gain. These considerations have been foremost in my mind as I have attempted to report my findings accurately yet sensitively to potential effects in the field. My construction of my findings is only that, my construction, though verifiable through triangulation, using multi-sources of data generation. However, another researcher, working from a different perspective, might have formulated differing propositions, or placed a different construction on my findings. Once in print, though, words are imbued with an authority that readers may accept independently of the methodology of the research.

Kimmel (1996) discussed the need for researchers to keep the best interests of the participants in the research foremost in mind. In particular, procedures were implemented to protect all parties from any harm as a result of possible conflict of interests resulting from my dual roles as contract director and centre facilitator and doctoral researcher. The procedures negotiated with MUHEC included that there would be two points at which each centre would be invited into the programme: at the first point, all participants, including teachers, all parents in the centre and especially those of the case study children and the administrative representative, agreed to the research taking place alongside the centre's normal programme of professional development. The second point at which centres were to be provided with a ready "out" was at the completion of the allocated hours of professional development, at which time the teachers and I might choose to continue with the research programme. At each point all participants were to sign forms agreeing to the proposed programme (Appendix A). A further agreement was that my first doctoral supervisor would be available to each of the centres, for questions and discussion about the proposed procedures. The Ministry of Education agreed to the research continuing alongside the programme of professional development, subject to a receipt of the full proposal and including an outline of the procedures to be followed to protect all participants from harm. These requirements were met.

Possible conflict of interests

Possible conflict of interests as both researcher and facilitator of the centres' programme of professional development was made transparent to the centres involved at the outset of the research. Potential conflict was similar to that which currently exists in professional development programmes, between the roles of outside facilitator and the action research methodology. Rather than being seen as conflict of interests, the roles of researcher and facilitator were seen to enhance each other, as long as care was taken to assess these roles continually and to maintain transparency with all participants. Any requirements of my research over and above the expectations of their contracted programme of professional development were clarified and made optional for the centre personnel.

3.7 VALIDATION OF QUALITATIVE RESEARCH

"All research is concerned with producing valid and reliable knowledge in an ethical manner" (Merriam, 1998, p.198). Internal validity deals with the relationships between research findings and the reality of life in the educational sectors in which the research was conducted. According to Merriam, the six checks on internal validity are triangulation, member checks, long-term observation, peer examination, collaborative or participatory research and the clarification of researcher bias or assumptions at the outset of the study. Reliability of results in qualitative research is related not only to the replicability of the results, as in quantitative methods, but also to their dependability; given the data collected and presented: Are the results consistent with these and do the results make sense? Techniques employed in the current research to ensure dependability included: researcher explanation of assumptions and theories guiding the work; triangulation, using multiple methods of data generation and analysis, and providing an audit trail showing how the results were attained. External validity in qualitative research is concerned with generalisability from the specific study to other, similar situations. Strategies available for enhancing the possibility of external validity include the use of rich, thick description that allows readers to make their own links between situations; description of a typical site or programme, again encouraging comparisons with the reader's own experiences; and the use of multi-sites, or several cases or situations, to provide a greater range in the area of interest.

3.7.1 Dimensions of validity and reliability

The question of validity relates to the credibility of the research: Does it do what it claims to do and are the results believable? Qualitative research and action research in particular, is often challenged as being too subjective and therefore unreliable; that the solutions it claims to generate cannot be universally tested and are, therefore, invalid (McNiff, 1988). According to Zeni (2001), the majority of issues in action research arise when the research has not been truly collaborative. "Collaboration and communication are the best guides to preventing the ethical dilemmas of practitioner research" (Zeni, 2001, p.164). Since my whole research project was concerned with collaboration and co-construction of ideas, the issues of ethics were readily addressed within the framework of my regular meetings with each group of teachers and children. My practices of full dialogue and transparency feature in my reporting of our research in each centre, and a specific example is reported here from Kauri, in Chapter Six, Section 6.2 (see p.164).

McNiff (1988) identified the three steps towards establishing the validity of a claim to knowledge as: self-validation, peer validation and learner validation. Self-validation includes researcher attention to values in practice, critical reflection; disciplined inquiry; and personal interpretations as a basis for dialogue. Peer validation is about the "need to engage in public debate about practitioners' claims to understandings"; dissemination of research progress and understandings are important aspects of action research. The evidence of the learners themselves is "perhaps the strongest support in the researcher's claim to knowledge" (McNiff, 1988, p.135). There is ample evidence in my data generation that the first two of these methods, self- and peer validation, have been met in the current research. The third, learner validation, is central to my study, in that it is the child's voice that the teachers wanted to learn to hear and the teachers' (as learners) voices are strongly present in my reporting of our work.

The issue of validation reflects the strengths of action research, its relevance, emancipation, democracy and collaboration. Graue and Walsh (1995) identified four interrelated dimensions of validity in qualitative research. In the *technical and methodological dimension*, the techniques used to generate data are the beginning of a

project and the first port of call for examining validity. In addressing the *interpretative dimension,* Graue and Walsh (1995) discussed interpretations, or assertions, as the results developed from data gathering. The author needs to provide sufficient information from the vast array gathered to allow the reader to assume plausibility. In considering *textual/narrative validity,* it is important that the write-up of the research is congruent with both the methodology and theory on which it is based and with the audience for which it is intended. We need to be able to be heard by people who would be interested in our research and this requires using language comprehensible to all. The written format needs to help others to understand our findings; both writer and readers have agendas to be addressed in this. Graue and Walsh's *praxis-related validity* is similar to Stake's (1995), *consequential validity*, in that researchers should consider the consequences of their research measurements as part of their responsibilities. In descriptive research, this means researchers need to be aware that their research reports may lead to the case being wrongfully held in low esteem in the field, and if this is unwarranted, then the report is itself not fully valid. As Stake (p.108) states, this is indeed a high standard for validity to meet. We do have ethical obligations to minimise misrepresentation and misunderstanding, and as researchers, our colleagues and we do want to be useful and be welcomed to return to the field for further input, into research and perhaps into changing practices. The issue of consequential validity is one with which I struggled at every stage of my research, especially for the one centre that was in so many respects different from the other three centres. As with all the centres, I was careful to make changes to my writing as the result of feedback from the participant teachers and from the centre's senior staff.

3.7.2 Triangulation

Triangulation in social research is the reference to the use of two or more methods or sources of data collection, in order to improve the researcher's "slice of reality" and decrease bias, an especially important feature of research involving human behaviour. "Triangulation has been generally considered a process of using multiple perceptions to clarify meaning. Acknowledging that no observations or interpretations are perfectly repeatable, triangulation serves also to clarify meaning by identifying different ways the phenomenon is being seen" (Stake, 2000, pp.443–444).

Triangulation is of special value in my case study research, because of my collection of a multiplicity of perspectives in a limited number of examples. A case study needs to fairly represent differing and sometimes conflicting viewpoints. Triangulation in such cases is achieved through checking with participants that the written account of the researcher's work with them accurately reflects their contribution (Wellington, 2000). This technique, known as "respondent validation" is a major authenticity check for qualitative researchers. In my study, it was vital that I returned to the participants of the case study centres to check that they both agreed with what I had written, and that they had a further opportunity to be convinced that my report would do them no harm. Data generation involving several sources, such as my own video-recorded and field observations of interactions in centres, the teachers' observations and discussions of them, written records of planning, and parental contribution about their own children, provided good triangulation of data (Wellington, 2000). Alton-Lee (2001) coined the term "filter-wheel methodology" (p.91) as an expression of the multiple perspectives provided to the research process through the collaboration of teachers and researchers in the research process. "Such shared ownership and co-authorship of classroom practice ensure the teacher is genuinely informed about and able to question and contribute to the framing of the research questions, the purposes of the data generating approaches and the assumptions influencing the analysis" (Alton-Lee, 2001 p.91).

3.8 SUMMARY

To cater for the varying requirements of individuals in a teaching team, a professional development facilitator requires a repertoire of skills and understanding that address the three planes of activity, the personal, the interpersonal and the institutional/community. Facilitated and collaborative action research also requires careful attention to issues of insider/outsider roles and to the ethics of the research, from conception to publication. Transparency of understanding is supportive of addressing possible conflict of interests and triangulation in data generation is a major contributor to the reliability and validity of the research.

The major research model used in this study was collaborative action research, conducted in multiple (four) case study early childhood centres, focusing on the teachers (from one to three) and up to three children in each centre and on the parents of these focus children. The case study method was also useful in making manageable both the choice of centres and the choices of teachers and children within the centres.

CHAPTER 4

RESEARCH METHODOLOGY AND PROJECT DESCRIPTION PILOT AND PROPOSITIONS

4.1 INTRODUCTION

Since its conception my research has been concerned with whether and how early childhood teachers were implementing a sociocultural approach to planning for children's learning and what this actually means, or could mean in practice. My specific research questions have evolved with my study, as I have worked with the teachers in the case study centres. Thus the story of my research is the story of my own changing thinking as much as it is the stories of my co-researchers' changes in thinking and in practice.

The questions to which I sought answers at the outset of my study were:

1. *How is children's learning scaffolded in early childhood centres?*
2. *What content knowledge and professional development processes support staff teams as they learn to scaffold children's learning?*

4.2 PROJECT OUTLINE

As is common in qualitative research this project did not proceed in a direct sequence of events, from conception to conclusion. Several stages and phases have overlapped and intermingled, both in time and in contribution to the understanding of the participant teachers and myself, of sociocultural theory in practice. During the study a significant shift occurred in my thinking from a focus on scaffolding children's learning to co-constructing learning with them. This shift began when a teacher at Kauri, the second case study centre, questioned the differences between the two metaphors, and resulted in my revision of the propositions as an outcome of my working to shift the thinking of a teacher at Terrace. The following table (Table 4.1) provides a general outline of these stages and phases.

Table 4.1 Project outline

STAGE OF PROJECT/ TIME PERIOD	TASKS	CENTRE and PERIOD	PHASE and OUTCOME
Preparatory May 1997 to December 1998	Check feasibility of supporting teacher-child dialogues	**Pilot Study** December 1996–February 1997	Data generation and analysis trial. Development of initial propositions.
Action research professional development, in 4 centres September 1997–November 1999	Major data generation phase	**Manuka: Case Study 1** September 1997–October 1998	Guided by scaffolding metaphor. Co-construction of professional development as model for working with children. Full case study.
		Kauri: Case Study 2 November 1998–June 1999	Questioning differences between scaffolding and co-construction. Spiral reciprocity between planes.
		Terrace: Case Study 3 March 1999–November 1999	Change from initial to revised propositions, from scaffolding to co-construction. Model of intersubjectivity.
		Haven: Case Study 4 (with intermediary facilitator) February 1999–July 1999	Flexible use of co-constructive and scaffolding interactions.

In discussing my intention to study the scaffolding of children's learning in centres with colleagues, I initially met some scepticism about whether or not I would obtain sufficient data. Such concern was justified in the research attempting to measure verbal interactions between adults and children; very little teacher-child dialogue had been recorded in early childhood centres, especially related to children's thinking (Meade, 1995a,b; Smith, 1996). Concerned that I might be thwarted in my attempts to support improvement in this situation, due the lack of a base of teacher-child interactions on which to build, I began my study with a pilot study. Conducting a pilot study also provided an opportunity to develop and trial protocols for data generation and analysis.

4.3 THE PILOT STUDY

(See Appendix B for full details of the Pilot Study).

The pilot centre was a rural town kindergarten with two full-time and one part-time teacher and thirty four-year-old children in the morning session during which I observed interactions between a focus child and his teachers and peers. One of the major purposes (Appendix B, p.300) of the pilot study was to check that it would be feasible to investigate how teachers scaffolded children's learning. My question was whether

sufficient scaffolding would occur for me to be able to work with the team to support their refinement of these skills, or whether I might need to start a programme of professional development with supporting teachers on their use of the more basic skills of quality interactions.

4.3.1 Pilot phases

The first phase of the pilot study work involved decisions with the teachers about what would be valid evidence of their scaffolding of children's learning. As a result of these discussions we trialled the method of tracking the implementation of plans to extend one focus child (see Glossary), from the teachers' observations through to implementation of their planning and their evaluation. Data generation included samples of the centre's observation and planning forms completed for this child, records of discussions with the child's parents, planned learning outcomes and evaluations. Samples of the child's produced work and photographs of him while at work during the implementation of the teachers' plans for extending him, completed the entries to his portfolio (see Glossary) during this period.

In the second phase I video-recorded the teachers interacting with the focus child as he interacted with other children during their play. Transcriptions of these records contributed to the observational stage of the teachers' planning for James. In one 20-minute video sequence I was able to identify examples (Table 4.2) of each of the several ways in which these teachers were scaffolding learning with children.

Table 4.2 Teachers' scaffolding behaviours identified during a 20-minute pilot centre observation

Joint problem-solving: (verbal), goal identification, forward planning, rationale for decisions, revising. evaluating and checking outcomes, suggesting possibilities.
Developing intersubjectivity: Extending child's interest and making links to related activities or ideas
Entering child's fantasy play
Showing warmth and responsiveness
Giving positive feedback on cognitive activity ("that was great thinking")
Acknowledgement; friendliness
Keeping child in zone of proximal development
Child repeats or extends newly learned behaviour
Peer scaffolding; child copies or extends another child's activities
Supports peer scaffolding
Verbal cueing; adult has possible response in mind
Physical cueing
Encouraging risk-taking
Reducing frustration
Directing attention to narrow range of features and alternatives within task
Open-ended questions (no particular response in mind)
Teaching and modelling skills and strategies
Encouraging peer tutoring
Promoting self-regulation: Encouraging autonomy by withdrawing support, on evidence of growing independence
Monitoring (no interaction; observing for appropriate intervention)

The above items were developed from Elliot (1995, pp.23-34).

Elliott (1995) described scaffolding behaviours such as those listed in Table 4.2 in the generic sense (see Section 2.3 for a discussion of the early and the generic senses of the scaffolding metaphor used in this thesis). At this beginning stage of our research the teachers and I had not found it necessary to critique the scaffolding metaphor. The checklist (Table 4.2) of scaffolding techniques for the transcribed observation period provided evidence that scaffolding, in the generic sense was, in fact, occurring at least in this centre. Each item on the list was noted on more than one occasion. It may well have been that the observation period was atypical of this centre, although anecdotal data from several previous visits indicated that the observation was typical of outcomes for individual focus children. Such a high amount of scaffolding may also have been atypical of other centres or services. As has been indicated in the review of the literature, the recorded amount of staff-child interaction and the depth of dialogue engaged in during the recorded observation (see Appendix B, p.301, 305, 306 for samples of dialogue transcriptions), would be considered to be generally unusual in an

early childhood centre. Anecdotal data, collected in the course of the professional development programme in the contract provider's region in which I was working at the time, had provided much higher expectation of the occurrence of scaffolding of learning, in the centres that had been engaged in curriculum professional development, than had been expected from readings of the body of early-childhood literature.

Nevertheless, in the pilot study centre there was little evidence that the teachers explicitly sought to identify what the children were thinking, on any specific topic. Retrospectively, I could see I had not worked with these teachers on developing their dialogue skills with children. Scaffolding of learning remained at the level of identifying the children's interests, strengths and schema, and providing equipment and activities to extend these. In not analysing the verbal interactions we missed opportunities to improve the teachers' skills in developing a collaborative learning environment. Thus the scaffolding remained largely both physical and in the teachers' control. Meade (1995b) described similar findings in her action research related to teachers' work with children's schema.

Methods of the pilot data generation included the teachers' articulation of their centre planning processes and documentation (see Appendix B) and collection of a sample of observation and planning forms. A video recording was made of teachers interacting with their planning focus children during a full three-hour session, from which the 20-minute transcription of teacher-child and child-child dialogue was made. Further transcriptions were made of the teachers and the researcher and of the researcher and the focus child's parent reflecting on the video and the transcriptions. These processes were found to provide a comprehensive summary of this centre's planning for and interactions between, teachers and children.

In using the video camera for data generation, it was important to provide each child who was to be the major focus during a recording session, with an opportunity to become familiar with the camera and the microphone. Other children in the sessions being videoed also required some familiarity, both with the researcher presence and with the equipment. The focus children were given the opportunity to view their recorded sessions, as were their parents/whānau.

The third requirement of the pilot study was to develop initial instruments for assessing the scaffolding of learning. The tabulated list of observed examples of scaffolding (Table 4.2) did not describe the richness and depth of the interactions between the staff members and the children and between those children that were captured on video; transcriptions of teacher-child and child-child dialogues from video sequences, and tape recordings provided this necessary richness. In terms of the purpose of this pilot study, the checklist of scaffolding techniques was a useful tool. Although the checklist categories were not mutually exclusive, they were useful in providing an indication of the range of adults' generic scaffolding skills. This list provided a positive base on which to begin discussions of scaffolding behaviours in the subsequent case study centres.

4.3.2 Discussion of pilot findings

The teachers reported that they knew the focus child much better as a result of their observations, profile development, discussions with his mother and interaction with him during the week of activities planned especially around the child's interests. They believed this knowledge maintained their high level of scaffolding the child's learning throughout the subsequent weeks, during which other children had become the focus of observation and planning. Knowing a child's interests and strengths allowed the teachers to scaffold learning in these areas incidentally, throughout the kindergarten sessions. The teachers had recently engaged in professional development with a focus on their understanding and implementation of schema theory (see Section 2.2). This understanding was woven into their observations of children's interests and developing ongoing projects that extended their schema. Teachers worked with groups of children to set up increasingly complex processes and structures, supporting skills in problem setting and solving. However, at no time did these teachers identify explicitly what the child thought or understood about the topics of discussion. This lack of really tuning into children's thinking was to become a major aspect of the programmes of professional development in the four case study centres.

A major outcome of the pilot study was the beginning of the formulation of questions in each of three planes of analysis, and research propositions that set out to provide answers to these questions.

4.4 SELECTION PROCEDURES

4.4.1 Selection of case study centres

All licensed and registered early childhood centres in the region were offered a place in the College's In-centre Strand of the programme of Professional Development. This strand consisted of 15-20 hours of facilitated support for each teaching team, to be used as negotiated between the facilitator and the team, within the time span of an academic year. Selection into the strand depended in part on the number of places available, the previous support provided to the applicant centre and the needs identified by the centre, which they chose to address. To ensure the completion of the successful programme of professional development, using the action research approach alongside the requirements of my research topic, several additional aspects were required to be in place.

The centre team needed to agree to be participants in the programme, with me as both researcher and their professional development facilitator. This included the ethical requirement of MUHEC, that participants should be aware at the outset of the potential for extra commitment this participation could place on the staff to collect parents' permission, at the two different points in time, as discussed above. Copies of letters to participants, information sheets and permission forms are included in Appendix A. The area of work on which the centre team had decided to concentrate needed to be congruent with my general areas of interest: scaffolding (at the outset, though this developed into co-constructing learning for the later-joining centres) children's learning through the analysis of staff members' and children's dialogues, possibly identifying children's current schema and an interest in developing a project approach to programme planning, if this were not already in place. Where the centre had been accepted into the College's programme of professional development, under contract to the Ministry of Education, this matching of interests of centre with researcher was achieved through the centre's initial written application for support, in their application form for professional development. The expectation that the documentation and analysis of adult-adult and adult-child dialogues would form a major component of the professional development for the staff members was explained to teachers before they agreed to work with me. Within the structure described for professional development,

there was space for considerable variation of patterns of planning and of interactions during the sessions, as must be in a co-constructed programme of research.

Four centres – two childcare centres and two kindergartens – chose to be case study centres. These centres appeared at the outset of my study to meet the above requirements. Specifically, each team had expressed an interest in working on developing planning processes for individual children and particularly on improving their skills of dialogue with children. Characteristics of the selected case study centres are briefly described in Table 4.3.

Table 4.3 Brief case study centre details

Centre pseudonym	Centre characteristics	Facilitator of Action Research programme of Professional Development
Manuka	45:45 (see Glossary) public kindergarten; sessional; 3 teachers.	Researcher
Kauri	Private kindergarten; sessional; 2 teachers; 25 children Christian underpinnings.	Researcher
Terrace	Large community childcare centre, 15–20 teachers; 40 over 2-year-old children.	Researcher
Haven	Small private childcare centre; 2.5 teachers; 25 children.	Intermediary facilitator and Researcher

4.4.2 Selection of teachers and children within the case study centres

Within each of the four centres, two to four teachers self-selected into the programme; in three centres this involved all the teachers; in the fourth centre, only one teacher was able to maintain the involvement and she was from a centre of some 20 teachers. Each teacher selected one child from her whānau on whom to focus observations and planning. Data were generated for a total of eight teachers and eight focus children, three of each from Manuka, two from Kauri, one from Terrace and two from Haven.

The child participants were chosen using purposive sampling (Merriam, 1988):

- To represent each whānau grouping (see Glossary), for which the selected teachers were responsible.
- To ensure a mix of boys and girls in each centre.
- As likely to remain in the programme for 12 months from the start of data collection (age being the major factor here). Thus all the focus children were from three to four years of age at the beginning of my study with them.
- About to become the focus of planning in the whānau's planning cycle (see Glossary). At the start of the research, all four centres had in place a system of planning that focused for 1-2 weeks on observing a few individual children and then planning group projects around their identified interests and strengths.

4.5 DATA ANALYSIS IN THE SOCIOCULTURAL PARADIGM

4.5.1 Questions relevant to sociocultural research

The teachers and I in the pilot and the case study centres found we needed to come to terms with different terminology and different sorts of questions because we were working in a sociocultural paradigm. As an example, the language of assessment changed from that of assessing outcomes to identifying how children's interactions changed, or what Rogoff (1998) called transformation of participation. Questions that emerged during the pilot study and were further developed in the four case study centres are now identified under the three planes of sociocultural activity.

Questions in the personal plane

What are the individual child's interests and strengths and what group activities can we plan that will support him/her in further developing through them?

Subscription to a sociocultural paradigm advocates planning for children's strengths and interests, addressing areas that are not strengths incidentally; planning for what the child can do, not for what s/he cannot do; and planning to extend each child within her/his zone of proximal development, in interaction with other children. Assessment in this paradigm is dynamic, in the context of authentic experience, and careful documentation involves parents while providing better understanding and empowerment of children and teachers (Gandini, 1998).

How does the child participate in authentic activity and how does this change from a relatively peripheral role of observing and carrying out secondary roles, to that of assuming various roles of responsibility in the management and transformation of such activity (Fleer, 2001; Rogoff, 1998).

Authentic activities are of interest to children because they are subsets of cultural activity that children and adults engage in. As children learn their roles in society their involvement changes from observation to peripheral activity to full engagement. Rogoff (1995) described the tutorial processes that supported these transformations as participatory appropriation, guided participation and apprenticeship.

Question in the interpersonal plane

What evidence is there that the child is exercising his/her agency and recognising other children's rights to their agency, in collaborative decision-making, problem-solving and higher order thinking skills?

Related to the use of power, agency is about challenging the discursive practices of the institution. Culture, gender, age and interests are all aspects of an individual child's life that can be trampled unless teachers are alert to interactions in which one child makes gains at the expense of another. Any of *Te Whāriki's* learning outcomes could be phrased as a question for assessing children's development. Note that children are not expected to reach any particular goal by a specified age or stage; teachers are expected to facilitate children's moving forwards and through each learning outcome.

Question in the community/institutional plane

How is this child learning to use the culture's rules of power and domination?

Unless teachers involve families and whānau as true partners in the planning of programmes for their children, children from minority groups are likely to be positioned as failures simply because the institution is using its cultural capital in assessing children from different cultures by using the same benchmarks. In co-constructing meaning, issues of power and agency are important. Adults in our dominant society hold the power and agency; minority cultures and children can only have them if we allow it. It takes time to develop a community of learners, in which the children know that they do really share the power and agency.

4.5.2 The use of propositions in handling qualitative data

Answering questions such as those in the previous section is likely to generate much data, through which the researcher seeks to "discover" some patterns or models. Patterns developed from the data are then used to explain, predict, possibly prevent and/or improve the situation under investigation. While it is possible to live with the uncertainty of unstructured masses of data, making some sense of it during the generation phases will support the emerging categorisations towards patterning. One possibility for finding patterns early in a research project is to develop a set of propositions, against which further data can be analysed. Propositions are therefore a method of organisation of data and of thinking; they remain open to scrutiny, modification, evolvement and confirmation, in the light of every additional piece of information collected. Bassey (1999) talked of "fuzzy propositions", which make no claim to absolute knowledge in the interests of examining the lessons of particular cases, and Stake (2000) discussed the evolution of issues in a study: the issue could be a "topical" one, or a "foreshadowed problem", an "issue under development", or an "assertion" (p.441). My propositions are akin to a combination of the last two, in that they are assertions developed from my experiences in the pilot study combined with my general understandings of the field of early childhood and from my readings of the literature; they are also "fuzzy" issues "under development", certainly not set in concrete and at all times open to modification or major change in the light of new evidence.

Propositions have been used extensively in summarising educational research and thinking, though less often as a guide to field work. Stewart (1997) developed five propositions "from personal experience and research findings" (p.i), which he then used as the framework to discuss and organise data in three case studies related to the management of school development. Stewart found strong links between his propositions and his findings, as would be expected. Wagner (1999) developed three related propositions that guided his research concerning the support of practitioners' development of new knowledge, the influence of power relationships on this development and the discontinuity that can develop in how new knowledge is organised and distributed amongst practitioners.

The propositions guiding my research were thus developed as a strategy for managing the data while answering the research questions. As these questions altered in response to research progress, so too did the propositions, both in content and in number. At the completion of the pilot phase the initial questions had been elaborated to include subsidiary questions, as follows:

1. How is children's learning scaffolded in early childhood centres?
    a. What theoretical content is supportive of teachers learning to scaffold for children?
    b. What is scaffolding? How can it be identified and improved?
    c. Does scaffolding of learning for current focus children take precedence over the scaffolding of learning for other children? If so is this justified in terms of scaffolding for these children once they are no longer focus children?
    d. What scaffolding happens during the centre programme for the children when they are not the current focus of planning?

2. What content knowledge and professional development processes support staff teams as they learn to scaffold children's learning?
    a. Is action research an appropriate form of professional development for the exploration and improvement of scaffolding children's learning?
    b. What are the variables that influence effective professional development in the case study centres?
    c. Do some factors need to be in place in a centre in order for professional development to be a benefit for lasting change, in building on teachers' current theories and practice?

4.5.3 Three initial propositions

The three initial propositions developed in response to these questions were:

Proposition one:

Teachers scaffolding children's learning require the use of many interaction skills.

Proposition two:

> Scaffolding learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Proposition three:

> Facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children.

These three propositions became the framework for the management of the large amount of data generated in the four case studies.

4.5.4 The methods of data generation for these initial propositions

Data generation revolved around the teachers' analyses of their dialogues with children and our analyses of the skills and processes that contributed to these, as predicted in propositions one and two. Data were also generated in response to proposition three, relating to the reflection of the teachers, the facilitator of one centre, and my own, on teachers' changing philosophies of learning and improved dialogues. All programme practices were relevant to identifying teachers' skills and processes and teachers provided samples of their planning processes including: observation forms, systems of communicating with and involving parents, planning cycles for focus children (see Glossary), teacher duty rosters, daily and weekly routines, groupings of children and teachers, term and annual planning and management plans, and centre physical plans and activity layout. Items from the hard copies of these data are included when appropriate in the summary of each centre's identified skills and processes under the three propositions. Further detail from these data has been utilised in Chapter Four and Appendix B for the pilot study. Chapters Five for Manuka Centre and Six for Kauri, Terrace and Haven Centres.

It is a complex task for a team of teachers to articulate all the planning processes operating in their centre. Subsequent to the sessions during which the teachers thought they had described all these routines and materials, I would frequently be surprised

during a session with the children to discover yet another sequence of planning events. An example here was from Manuka Centre, where all four-year-old children were extended through the development of individual "task cards" that their whānau teacher developed for them each week. Field notes were recorded during sessions of video recording to supplement visual and auditory record, and these were used as appropriate during discussion sessions to challenge teachers to reflect on the history and ongoing usefulness for children's learning of each set of processes.

4.5.5 Computer-assisted qualitative data analysis

Analysis of data was helped by the use of the computer software package, NUDist (Qualitative Solutions & Research, 1997) (see Glossary; Appendix C1). A computer programme has limited applicability in its theory-building capacity; for example "nothing should separate you from your data" (Mertens, 1998, p.354). Burgess (1984) discussed the issues of a software package that can be of enormous assistance in sorting data and supporting the building of theory, yet in practice can be a hindrance to a researcher's thinking. My use of NUDist was limited largely to its usefulness as a sorting tool for placing examples of the evolving propositions together.

All audio- and video-recorded dialogues, between teachers and children during sessions and between the teachers and me during our professional development, were transcribed and imported into the NUDist project for coding (see Appendix C2 for a list of transcriptions encoded). The NUDist programme allows ready sorting into categories at differing levels or nodes, called "parent nodes," "child nodes, or sub-nodes" and "grandchildren nodes, or sub-sub nodes". In effect, the propositions became the parent nodes, categories of behaviour contributing to these propositions became the child nodes and examples from the data were stored as grandchildren nodes, with relationships readily established across these sub-nodes that are called "sibling nodes" in the NUDist programme (see Appendix C3 for examples of coding structure under nodes and sub-nodes). As my ideas for each proposition changed I was quickly able to re-sort previously stored examples. In this manner the propositions have evolved: they have been increased and then reduced in number and their contents have been modified in response to incoming data and the sense I made of them. Further, I found it a simple

procedure to place the same example from a transcription in more than one node if required and this was a very useful tool at the early stages of sorting (see Appendix C4 for an example of text units as they were imported into NUDist).

Documentation of data

The use of the NUDist programme in this research was relatively limited. Its major use was in the coding of units from the large amount of text from 52 transcribed documents into as many of the propositions as they seemed to belong. The documents transcribed from audio and video recordings that were analysed through the NUDist coding system consisted of:

- Teacher-children dialogues recorded during sessions: 23 in total
- Discussions with teachers: 23
- Records of centre's professional development, including planning processes and reflections: 4
- Facilitator's reflection (Haven): 1
- Conversations with parents of case study children: 2

Additional data for analysis, alongside the emerging categories in NUDist, consisted of hard copies of:

- Centre planning processes, including routines, staff duties, observations, planning sheets,
- Copies of each focus child's portfolio, including observations and plans for learning; transcriptions of dialogues; and children's art or collage work
- Examples of previous and current centre projects with the children.
- Artifacts, such as photographs of children in activity.
- Field book notes including records of conversations with case study parents.
- Archival records of each centre's staffing, with group constitution and size, ratios, qualifications, length of service, previous professional development undertaken.

The programmes of professional development in each centre are addressed in Section 4.6.

Because the questions of the research had been developed into propositions during the Pilot Study, the initial categorisation at the nodes was based on these proposition titles. Propositions were stored at node 6, which initially had 4 sub-nodes (see display tree, Appendix C5, C6). The location of text units under each proposition node, with sub-nodes at the child, grandchild, great-grandchild levels, facilitated reflection on the evolving parameters of those categories and ultimately to the structure and meanings of the propositions. The creation and merging of nodes and sub-nodes in response to their text contents supported the ready storing of text examples as each new definition emerged. It was then an easy process to access examples across all four centres as required in support of such arguments as items under each proposition, and for similarities and differences in scaffolding and co-construction.

4.5.6 Revised propositions

Evidence collated in NUDist supported the development of my dissatisfaction with the generic definition of "scaffolding" that I used in the initial propositions. Chapters Five and Six detail the revision of these propositions; the revised set is provided as follows for reference:

Revised Proposition one:

Teachers and children co-constructing learning require the use of many interaction skills.

Revised Proposition two:

Co-constructing learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Proposition three (unchanged):

Facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children.

4.6 THE PROGRAMME OF PROFESSIONAL DEVELOPMENT

Each professional development programme was co-constructed with the participating teachers and in the fourth centre, Haven, this included the Facilitator of their professional development programme. For the three centres in which this included the full teaching team, meetings were generally conducted with the full team. For the one centre in which only one teacher of some 15-20 maintained involvement, it was important we set up communication with the rest of the team, so they were aware of the purposes of my presence in the centre, and also so they could support and perhaps learn alongside their colleague.

The programmes of professional development for the four centres occurred over a two-year-period during 1998 and 1999 (see Table 4.1 p.88), allowing some application of Stake's (2000) method of "progressive focusing". Times of meetings were negotiated with the teachers. Following the first exploratory session with the team I (or for Haven their facilitator) was available to support the teachers in a variety of ways: through attending their sessions to observe their interactions with children; through making video segments of their interactions with their focus children available, both as video and as transcripts and also, in the last two centres, as photos copied from the video frames; through meetings with the teachers in which we analysed data collected by them and/or by me; through providing models of reflection (Brookfield, 1995; Smyth, 1991; Stewart, 1997); and through providing readings relevant to their discussions on theory and practice.

All meetings with the teachers were tape-recorded, transcribed and loaded in NUDist (see Appendix D1 for an example of a record sheet of a centre's professional development session, and Appendix D2 for a coded record of each centre's programme of professional development).

4.6.1 Exploratory professional development session

At my first session with the teachers of each case study centre, my major tasks were:

- To ensure the teachers and I were in accord with our expectations that they use their professional development programme to work on developing their skills of interacting, especially through dialogues, with the children.
- To ascertain how the staff currently planned for the scaffolding or co-construction of learning with children. This invariably involved both the teachers and me in a gradual coming to terms with the centre's systems of planning for the whole centre programme, for the core curriculum (see Glossary) and for group and individual children's learning in their emergent curriculum (see Glossary). As part of this process we reviewed together all programme planning documentation and processes. This was the first of many opportunities for the teachers to articulate their work with the children, to each other and to me. Their philosophies of learning and some of their life histories were relevant in this articulation.
- To consider ways teachers might gather more accurate evidence of their scaffolding/co-constructing of each child's learning (as base data for discussion of ways of improving interactions), any equipment and time required to do so and how I might support this data gathering, such as through videoing their interactions with the children.

A sample transcription of a session with a teaching team is located in Appendix D3.

4.6.2 Schedule of video recording

I negotiated with the staff members concerned, the sessions and times when it would be most opportune for video recording of children and teachers working together to take place. If the teachers were carrying out their own recording, they could choose to do so at any time, and to choose the segments they wanted to analyse in our professional development. If they chose me to do the video recording, then we needed to schedule times for me to do this. The teachers maintained the right to veto this recording both when it was in progress and before sharing it with the professional development group. The intention here was to gather the best dialogue the teachers could engage in with each focus child, during interactions with other children and/or teachers in their regular centre programme, at any activity, to provide data for analysis. Meetings were held with teachers either outside their session times, or in one centre through the provision of a reliever, to enable the teacher to be available for discussions. Following discussion of

the video and/or tape recordings, the teachers collected further dialogues before the subsequent discussion session with the team and me. During my own video recording sessions I also kept field notes to record any events that:

a) seemed significant for a focus child or a teacher, which might not otherwise be recorded, and
b) I could not identify as having been described by the teachers' articulated planning processes.

These observations were subsequently used in the discussion sessions with the teachers to clarify procedures and underlying philosophies.

4.6.3 Schedule of discussions with participants

My action research with each centre was planned to involve me in discussing each observation with the relevant participant(s), sometimes with one teacher, though more often with the full team. These discussions were at fortnightly or monthly intervals, to allow the teachers time to gather their data between our discussion sessions.

Sessions with participating children

I positioned myself always as a temporary intruder in the children's day. In this case it was the children, rather the adults who were the "knowledge holders, the permission granters and the rule setters" (Graue & Walsh, 1998, p.57). I entered their world with humility, took time to accustom them to the equipment I was using, by showing them how to look through the video camera's viewfinder and to record sequences of their friends, or to tape dialogue and to listen to it in replay. If a child was obviously uncomfortable with my presence, I either left the area, or asked their permission to remain, with an explanation of what I was trying to accomplish. If they still did not want me there, I respected that and left them alone. In one centre (case study 2) where I was able to provide photo prints of the children and their activities, the children became especially interested in inviting my presence, requesting that I take specific photos of their activities. At all times I treated the children as though they were "smart, sensible and desirous of a good life" (Graue & Walsh, 1998, p.57), thus maintaining my relationship with them.

In respecting the children's rights to non-interference in their own centre (Hsueh-Yin, 1998) there were times even with the focus children, when I felt an intruder. These children came to know me quite well and usually accepted my presence and my video camera. They all accepted my invitation to look through the lens and to play back what they recorded and could do so at any time. In practice, they became so familiar with my presence, they frequently ignored me. This was further facilitated by my use of the radio microphone (worn by child or teacher) and telescopic lens on my video camera, so that I could be at one side of the room or playground and clearly record both sound and image from the other side of the area. However, on the few occasions when a particular focus child was clearly uncomfortable with my presence, I verbalised this with him and desisted from further recording of him that day.

Discussion sessions with teachers

As soon as possible after each video recording of the children, I met with the teachers to engage in a variety of activities. A typical sequence of events during a discussion session would be:

1. View the recordings.
2. Engage in (a tape-recorded) reflective discussion related to the video recording.
3. Consider any readings or theory relevant to their understanding of their practices or possibilities for intervention in these. Smyth's (1991) four moments of reflection were frequently used at this point in the professional development programmes.
4. Decide on action to improve the quality of teacher interactions with children. The teachers and I each agreed on the activities that would be completed before our next discussion session.
5. Either the teachers or I would record subsequent teacher-child dialogues, which would in their turn become the subjects of discussion at future professional development sessions.

Interview sessions with parents of focus children

Parents of the focus children were involved in the following ways:

1. In giving their fully informed consent. Wherever possible I talked individually with the parents about my programme of professional development and research.

2. The teachers talked with the parents of the focus children as a normal aspect of their planning cycle. In these discussions the teachers ascertained how much of their centre activities and ideas the children shared at home, and what the children were currently interested in at home that might be of interest to them at the centre. This mutual exchange of information between the teachers and the current focus children was integral to the planning of appropriate programmes of extension for the children.
3. I talked to each parent of the focus children, either face to face or by phone, in each of the weeks related to the inclusion of their children in the planning cycle as focus children: a few times during the week in which the children's specific plans were being put into effect and again six weeks or more later, to ascertain how the children's interests had continued to be catered for once they were no longer focus children. The questions I asked of the parents were: what has your child talked about since his/her session at childcare/kindergarten today? What and how has (child's name) played during the last few days? Do you think this play has this changed in any way as the result of (child's name)'s interactions with the teachers and other children at the centre? How have your child's home interests been incorporated into the planning and activities at the centre?

4.7 THE ROLE OF THE RESEARCHER-AS-FACILITATOR IN COLLABORATIVE ACTION RESEARCH

My role in each centre was a privileged one. In each centre at least one of the teachers was incidentally a Teaching Associate in the programme for which I was at the time the University Director/Co-ordinator and I was well known in the district as an early childhood advocate. In spite of all attempts to achieve equality, I could be no other than an outsider and one with perceived expertise and authority, if only because of my ready access to relevant printed materials and because of my appointment by their local university as the team's facilitator. In my commitment to co-construction of research with each team, I was careful to address the following:

- Maintaining transparency with the centre participants at all times.
- Sharing as many of the discussion and observation transcripts as they were interested in with the staff and parents, for their own use in the planning cycle.

- Being clear about my interest in supporting the teachers' skills and processes in hearing children's voices and planning to extend children's understandings based on their interests and strengths.
- Developing a high degree of trust with the staff members, the children, their families and management.
- Becoming a regular visitor to each centre at critical stages of the research, so children and staff members became relaxed during my presence. I needed to know the centre's routines to be able to time my activities around these and the children and staff members needed to be able and keen to share incidents and insights with me as they occurred.
- Giving frequent and appropriate positive reinforcement, during each visit to the centre. As a visitor to the centre and no doubt one perceived to have specific expertise, it was important I was perceived as a mirror for their reflection on their practices rather than as a critic of them. Although we were together working on their professional development, as well as on my research, I was not a member of their team. This togetherness, yet separateness, required a careful balance of personal interactions with professional distancing.
- Analysing transcripts of observations and discussions together. The purpose of this was to support the staff in identifying current best practice and to celebrate these while considering areas and processes for improvement.
- Co-constructing understanding with the teachers through analysing records of their best practices, in contrast to developing a culture of catching them out in practices in which I might have thought they ought to have been performing at a higher level. Through being clear about what purposes the observations and especially the dialogues, were intended to fulfil, the teachers were able to choose the most appropriate times to collect this data; it was sensible that they did so under the most ideal conditions they were able to organise.
- Maintaining records of and reflection on, every phase of the professional development work in the centre.
- Contributing to the programme of professional development in each of the four centres. As a collaborative action research programme, the centre personnel were in control of their processes. However, it was acknowledged that I had an agenda

of my own, supported by discussions with the facilitation team and co-ordinators and that I would be likely to guide input into such areas as:

- Planning the group programme based on observations of individual children (all four centres were doing this, though with varying levels of complexity and success).
- Implementing *Te Whāriki* in the curriculum (which means quite different things to different groups).
- Scaffolding/co-constructing learning, through providing readings and models and through maintaining a focus on specific teacher skills and processes relevant to scaffolding/co-constructing children's thinking and project work.
- Supporting the implementation of schema theory, if this was of interest to the teachers (see Section 2.2).
- Improving teacher-child dialogue.
- Developing greater familiarity with the project approach to planning for authentic learning with children.
- Supporting attention to the change process.
- Identifying teachers' philosophies of children's learning and the match/ mismatch between these and practices in the centre programme.

A record of the programme of professional development in each case study centre is in D2.

4.8 CHAPTER SUMMARY

Chapter Four has described the successful testing of data generation techniques in the pilot study, which led to the formulation of three initial propositions. These initial propositions provided the major focus for the categorisation of the skills and processes that the teachers employed in their interactions with children. Revision of the propositions, which began with case study two, led to the re-categorisation of the teachers' skills and processes. Appendix D4 details planning processes in each centre and items identified in each of the centres for each of the propositions. The method of selection of the four case study centres and their personnel has been described, as have the role of the researcher in the teachers' professional development and the programmes in which each centre engaged.

CHAPTER 5

MANUKA CASE STUDY REPORT

5.1 INTRODUCTION

In this chapter I report the work of the Manuka teachers in their programme of professional development, focussing on two of the case study children in their planning cycles during this period. In Chapter Six, specific aspects of our work in the other three case study centres will be reported. A major function of both these chapters is the provision of examples and discussion of the data generated, under the relevant proposition.

For each of the four case study centres I identified what was initially happening in each of the three "planes" of interaction, with reference to the centre's planning and programme implementation (Rogoff, 1998, p.688), and what changed in each plane during our programme of professional development. The planes are not mutually exclusive of each other's items, with "spiral reciprocity" (Saloman & Perkins, 1998) expressing links between planes and the mutual contribution of each plane to the others, leading to overlap between the items. This does not detract from the value of addressing each plane to ensure coverage of the bigger picture of influences. Addressing each plane in turn provides a focus in that plane while holding the other planes in the background. Addressing all three planes successively provides both in-depth focus on each plane and the overall "big picture" of influences and interactions. Table 5.1 relates the propositions to their constituent items and to the three research propositions (see Table 5.1). Findings of the research for each proposition are provided in this chapter for Manuka Centre.

Table 5.1 Aspects of centre planning and curriculum implementation located in three planes of activity and related to the research propositions

Research propositions	Aspects of centre planning and curriculum implementation	Planes of activity
Proposition one: Teachers scaffolding children's learning require the use of many interaction skills.	Recording teacher-child dialogues; teamwork between teachers and with parents. Teacher-child interactions.	The interpersonal plane
Proposition two: Scaffolding learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.	Routines and systems developed for programme planning and record keeping. Team philosophy of learning.	The community/ institutional plane
Proposition three: Facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children.	***Outcomes for children:*** Evidence of transformation of participation across activity settings. ***Outcomes for teachers***: Changes in team philosophy of learning and in use of skills and processes.	The personal plane

5.2 INTRODUCTION TO MANUKA

This 45:45 rural town public kindergarten (see Glossary) was selected as a case study centre because the team appeared to be optimally prepared to face the challenges of debating issues and potential change proposals. The three fully qualified teachers had already demonstrated their interest in developing their programme based on understanding children's thinking through identifying their current schema. Their planning processes, based on identifying individual children's strengths and interests, had been in place for at least a year, and the staff team had both collectively and individually been involved in an ongoing variety of professional development experiences. This was a team that believed in maintaining professionalism and the teachers demonstrated excellent working relationships, supporting and challenging each other in a professional and collegial manner. However recent staff changes were described by the Head Teacher as an impediment to in-depth planning for children's learning. Even during the programme of action research one of the teachers was

replaced and the professional development in this case was an opportunity to upskill the incoming teacher quickly, although her previous work in this kindergarten and in professional development facilitated her ready integration into the developing systems for planning.

Manuka's programme of professional development is discussed in Section 5.6, p.137; a sample session of the teachers and me in discussion can be found in Appendix D3.

5.3 PROJECTS WITH TWO CHILDREN

A focus for Manuka in this report is the teaching team's shift in paradigm from a developmental to a sociocultural basis for their planning and for their interactions with children. This paradigm shift will be identified through the planning processes for two children, each of which was the focus of an individual planning cycle. Kaleb's planning cycle was a focus of analysis at the beginning of the action research and therefore his project represents the best of this team's work with the children at that time, as we (the teachers and I) identified what that "best" was. Annabelle's project, having evolved during the latter stages of the action research, represents the changes the teaching team made in its planning and interaction processes.

Here, I present examples from Manuka's records, which demonstrate each proposition, usually in the words of the teachers themselves as they reflected on their progress in improving these skills.

5.3.1 Kaleb

(All names are pseudonyms)

Kaleb was one of the three case study children chosen in late 1997 at the start of this study. His story represents the philosophy, knowledge and practices of the staff team at that time. At the time of my work in his centre, Kaleb was a healthy, independent, energetic 4-year-old, who led his social group in the majority of interactions. He had a special friend, Kraig, with whom he shared family camping holidays (according to the boys); Kaleb and Kraig were nearly always seen to be playing together at the centre. A few other boys often joined these two for activities, though they were variously

accepted by the "in" two and had been observed by the teachers to be kept on the periphery until their usefulness has been established.

According to Kaleb's mother, Kaleb lived with Mum and Dad and a younger brother, a dog, cat and special soft toy, and he had had a sister who had died; he enjoyed outdoor activities with his family, rode a bike without trainer wheels, could hop, use a screw-driver correctly, write his name and "can wire heat-points correctly as well as strip connectors". He enjoyed books, playing in his tree hut, with his tools and pulling apart and fixing electrical things. He knew the words to a lot of songs and enjoyed making up new ones. Kaleb generally enjoyed new situations, books and had several "home" friends.

At kindergarten, Kaleb was in the Head Teacher's whānau, which meant she was especially responsible for his programme of learning (along with 14 other morning children); he would be in an intensive cycle of planning for at least one 4-week-period in the year and possibly two such periods. During the initial part of the planning cycle Kaleb was observed often by all three teachers, his interests and schema were identified and plans developed in negotiation with the three teachers and Kaleb's parents, for two weeks of group activities to engage with and extend his special interests. If an in-depth project developed from the children's interests in these activities, it would continue as long as the children maintained this interest.

The general programme in which Kaleb engaged each day consisted of a wide variety of well-maintained sets of activities and equipment, with time allowed for his free exploration of these with his peers. Kaleb especially enjoyed puzzles, sometimes on a table, as often as not on the floor with other children; carpentry and junk constructions, which ranged from the carpentry bench to large building frames and cable reels with such available additions as strips of carpet, rope, string, hessian, long planks of wood and large tinfoil sheets the use of which was encouraged at appropriate times by observant teachers; a variety of water activities, in the water troughs, the sand pit and the hose that Kaleb had used as a "fireman", dressed in full fire-fighting regalia; many methods of transporting equipment and materials from one part of the grounds to another, an important aspect of Kaleb's current "transportation schema", and he was frequently to be seen using a wheelbarrow or trolley to carry other children, or gear,

around. A good example of this was when he helped to carry a large (40kg) bag of rabbit pellets from the delivery area to the animal cage area. Kaleb was the "director" of the exercise, making the decision to change from a smaller to a larger wheeled trolley, "because the big wheels make it easier to push".

Observations by staff of Kaleb, both as excerpts from Kaleb's portfolio and during the pre-planning, observational phase of the planning cycle (over a period of two weeks)

When discussing their plans for extending Kaleb's interests, the three teachers accessed their observations of Kaleb, since he started kindergarten attendance and recorded in his portfolio, as well as those recorded specifically in his current planning cycle. Included in the portfolio are samples of Kaleb's artwork and photographs of his activities. The teachers' written observations from his portfolio follow:

- *While hammering onto frame: "guess what, my Dad's going to make a fence at my place, then we can get a puppy".*
- *Caught a cat and took to his blue hut, "the doctor's surgery"*
- *Using a lycra strip as a cat collar*
- *Making a dog kennel for his dog, Tasha because he hasn't got one "he sleeps in a basket"; filled it with little boxes "cause I want the dog to be up here (high in the kennel). Using a plastic container with a hinge "This goes here" where he had cut down strips on the box. "This is for the puppy". Puts poly tray inside the bottom of it. Finds more boxes and puts these into the big box that is used as the kennel.*
- *While digging in the sand, found an envelope "hey, I found a map"*
- *Set up ladders, swings, climbing equipment hanging from A-frame*
- *At carpentry "look at my patterns". Glued, nailed, drilled two pieces of wood crossed and tied wool around nails. Made a party truck out of the box, painted a number plate on the back, got wheels filled with bits and pieces which were the hats, drinks, food etc for the party.*
- *Playing shops, selling food through the window "biscuits for sale!!"*

Comments from parent collected by researcher, during pre-planning phase

- *Kaleb talked about the magnets in the speaker, at kindergarten*
- *"I only have to mention an interest of Kaleb's and the staff try to extend it".*
- *Enjoyed playing with the wrapping paper from the new lounge suite – made a hut;*
- *Kaleb knows the values and functions of resistors.*

Learning outcomes from Te Whāriki chosen as of particular relevance to Kaleb

> *Exploration, Goal 2, examples of experiences:*
> ...the opportunity ***for active exploration with the support, but not the interference, of adults....*** *Young children experience activities that develop both gross and fine motor skills and that offer varying degrees of challenge, such as balancing, hammering, obstacle course, construction activities, hopping, turning and pouring* (my bold).
>
> (Ministry of Education, 1996, p.87)

Plans developed specifically to extend Kaleb

Provide old electrical equipment to be pulled apart and experimented with.

Provide boxes, containers, sheets, umbrellas, to enable enclosure schema to be carried out.

Encourage drawing of pictures about work such as making a map, if burying in the sand pit.

Provide resources to extend dramatic play roles, such as the doctor role.

Bring books of interest from home.

Provide reference books for interests.

Researcher analysis of teacher observations of Kaleb and their plans for extending him

There are few links between the teachers' recorded observations of Kaleb and his interactions in the kindergarten and the plans they developed for extending him; there are more links between his mother's information on his interests and the teachers' planning. The teachers developed plans based on their general knowledge of Kaleb's interests rather than on their recorded observations. Although Kaleb's mother reported that he had talked about the magnets at the kindergarten, the staff did not discuss these either in my hearing or in their records. These teachers had not specifically planned to record interactions, verbal or otherwise, related to Kaleb's major interest in things electrical, neither had they followed up in their planning for his recorded interest in puppies, kennels and carpentry. Any dialogue record was of short statements made by Kaleb in reference to his activity, with no record of anything the teachers had said before his words or in reply to them.

The learning outcomes accessed in *Te Whāriki*, which presumably the teachers intended to support Kaleb towards meeting, seemed of little support in the plans developed for Kaleb. However, the phrase from *Te Whāriki* "the opportunity ***for active exploration with the support, but not the interference, of adults"*** chosen for their transcription into their plans for him, became retrospectively significant for these teachers.

Observations by teachers of Kaleb, during the implementation phase

- *Unscrewed a speaker from a stereo: "Look, it's apart, yeah. That's how it works. Here's what's wrong with it. I have to take it home and put it in my tree hut. It will work because all the wires are still connected"*
- *Dressed as fireman, with coat and helmet; used hose, taking turns at being leader "Look, there's a fire up there" proceeding to hose the tree with water.*
- *Helped carry the bag of pellets to the rabbit shed; showed knowledge of the size of wheels influencing effectiveness of the trolley when carrying a heavy load "the bigger wheels make it easier to carry".*
- *At the "blue house" Kaleb suggests using wire to connect the house to the electric set.*
- *The blue house became a "radio dungeon" where radios were crushed, then fixed. When asked what happened to the radios when they were fixed, he replied, "The lizard ate them all up".*
- *K, K and M using yellow tape to wire up their house; K talked about wiring up the meter board, switches and lights. An adult suggested he might like to draw a plan of where the switches and wires needed to go; he wasn't interested because "I know where they go already because I am the inspector".*
- *K working co-operatively with 4 other boys to carry TV to blue house to be fixed; talked about needing wire strippers to wire up the wires and fix the plugs.*
- *At carpentry table, joined 4 pieces of wood to make a witch on a broom; used lots of resources (lids, plastic containers); when song came on the tape continued to glue while singing the words to the song. Talked to the staff member*
  Kaleb: I've got Bad Jelly the Witch story, do you like that one?
  Teacher: Yes, you could bring it from home.
  Kaleb: It's a record.
  Teacher: Maybe we could borrow the tape from the library.
  At whānau time "Red Witch in the Cherry Tree" was read to the group; Mum said she would tape Bad Jelly the Witch for use at the centre.
- *Made treasure map, buried the treasure – more interested in burying and finding the treasure than in making a map*
- *In the blue hut, played with the radio and the calculator.*

Staff Evaluation of the Planning Cycle

> *Throughout the planning cycle Kaleb had opportunities to extend his interests. Providing props and encouragement for dramatic play and his electrical skills went well. It was difficult to extend his knowledge in electrical sets as he enjoys solitary play in this area. Trying to find out about these skills, as Kaleb enjoys independent play with his peers, "not adults".*
>
> *All the desired learning outcomes were met and will continue to be extended. Kaleb is in an enclosure schema where he enjoys being inside things or placing things in boxes etc. There were a variety of resources available for Kaleb to use. He spent a lot of time in the huts carrying out dramatic play roles.*

Researcher analysis of the teachers' recorded interactions with Kaleb

Kaleb's records of teacher-child interactions focused on him almost out of context of interactions with other children. The teachers kept records of Kaleb's achievements and interest in activities, in what they called incidental observations and were providing equipment and materials with which he could extend his enclosure or transportation schema. The teachers' evaluation was related to their provision of equipment and encouragement and to Kaleb's engagement with these, rather than to his engagements with other children and with the teachers. Teacher-child interactions were minimal in terms of finding out what Kaleb was actually thinking or understanding about the topic. Very little conversation was recorded with the case study children. Although a lot more shared experiences occurred during the implementation phase than during the pre-planning phase, the children were not challenged in their thinking through verbal interactions with adults.

When I suggested to the teachers that they could be doing more verbal challenging of children's ideas, there was some reluctance on the grounds that the teachers would feel as though they were "invading the children's privacy" and "pushing our own ideas". Although their records indicate the teachers were aware of the children's activities and even recorded some of their thinking, as brief verbal exchanges, they did not use this information to further extend the children's thinking about the topic. In fact, the teachers actually knew very little about what the children were thinking, and they shared little of their own thinking with the children. The sequence of observing, planning, implementing their plans for Kaleb and interacting with the children, was an example of

planning and interactions based on the teachers' philosophy of "development leading learning" (Berk & Winsler, 1995, pp.100-101; Vygotsky, 1934/1986). Under such a philosophy, children are provided with a rich environment and are encouraged to learn through interactions with each other and through working with concrete materials, at their own pace and in their own ways, with little (perceived) interference from adults.

During the processes of their professional development programme these teachers considered new ways of interacting with the children and subsequently new ways of planning to ensure they could interact more closely with them. The following record of their work with Annabelle indicates these teachers' shifts towards recording teacher-child dialogues and using them to extend children's thinking.

5.3.2 Annabelle

Annabelle was one of the three case study children who continued as the focus of their teachers' planning towards the end of the centres' programme of professional development. Annabelle was aged 4.5 years at start of planning cycle. Her story demonstrates changes the teachers had made in their philosophies of learning, knowledge and practices, largely as a result of their professional development. In contrast to the planning procedures the teachers engaged in with Kaleb, the following excerpts from Annabelle's profile provide evidence of their affording much more attention to her thinking and her representation of this thinking in a variety of ways (some of this new focus has been highlighted in **bold** in the following records).

Information from Annabelle's family

> *Annabelle is the second of two girls in her family, which consists of Mum, Dad and the two girls. Annabelle has two special toys, a dog and a bear and her favourite books, songs and TV programmes were: "Who's That Nibbling" and "Wiggles". She enjoys jumping on the trampoline, playing with the computer, drawing and playing board games. Annabelle copes well with new activities and with being in the care of other people, so long as "we show her around beforehand...and talk it through with her." Her social skills are good "although tends to interrupt conversation" and she enjoys spending time with "her sister, Dad, grandparents, kids and sometimes, alone."*

Incidental observations, by staff

As they witnessed or experienced them, these teachers made notes on 'sticky pads' of significant incidents and interactions or comments and dialogues for any child and especially those who were currently focus children. These notes were later stuck into a page in the child's portfolio, as one form of observation. This was the initial aspect of the individual planning cycle for Annabelle:

Excerpts from the teachers' observations documented in Annabelle's portfolio

- Annabelle's profile (portfolio) includes many drawings, completed in a variety of media; this represents her enjoyment of art in any form offered.
- 1.5.98: *A. We're working to build a house. Learning how to build something.*
- 4.5.98: Making hot cereal at the dough
- 6.5.98: A. pretending to make dinner at play-dough with F. and J. Works co-operatively with J. sharing dough and utensils – no verbal interactions. Attempts to make contact with F. non-verbally, using gestures.
  A: I need some more water, making pepperoni cheese to make pepperoni cheese you have to put this in here, add water, stir and add this...then you cook it. You have to follow the rules to make pepperoni cheese. You have rules to make rules, there's not cereal rules, pie rules, pepperoni cheese rules.
  Placing pieces of material into containers, making hot cereal.
- 7.5.98: Digging a garden in the sandpit; rakes the ground first, before sowing seeds...carrots, cornflour [cornflower?], strawberries and sausages. She is also growing hot chillies
  A: you have to grow them and water them every day, so they grow really big...you just wait for the things to grow out of the garden, you have to wait till they grow really big...a really long time".
  So if you stand on the ground you get footprints when the garden's trying to get out they see the footprints and it's really hard and it's really hard and they can't get out, the plants and seeds.

Moves on to the water trough, mixing sand and water to make *"magic potion"*. The teacher suggested extending this activity by shifting the water trough into the sandpit.

- 7.5.98: Drew a picture of a sausage, which she had grown, in her garden. Interested in spiders; together, A. and teacher found a book about insects and small creatures; A. found a picture of snails
  you can't have snails in your garden, you have to get rid of them...you jump on them with your gumboots."

Note: **bold** added to identify shifts between the teachers' records for Kaleb and for Annabelle. For Annabelle, compared with Kaleb, there is much more detail on her utterances, with quite lengthy excerpts of her own thinking included in her profile

record. This provided the teachers with a detailed record from which to plan for the extension of her thinking abut topics of special interest to her.

Observations by teachers of Annabelle in pre-implementation phase

1 Often **revisits previous ideas from days, weeks, even months before,** e.g., making magic potion; digging gardens, making pepperoni cheese.
2 **Knows** a lot about gardens
3 **Follows through processes**, e.g., using "rules" to make hot cereal
4 Has a special friend, J.
5 Enjoys mixing,(in sand, water, playdough) and making.
6 Talks about real things – also enjoys incorporating an aspect of fantasy.

Strengths:

- Non-verbal skills; able to get needs/ideas across non-verbally.
- Verbal skills; assertiveness.
- Art work.
- Working through and explaining processes, e.g., how to make hot cereal; how to make a garden.
- Knowledge of gardening.

Interests:

- Dramatic play.
- Playdough; sand; water; collage; art.
- Enjoys mixing/making (potions, cooking, etc.)
- Gardens.
- Real life and fantasy.
- Carpentry.

Schema:

- *Transforming.*

Learning Outcomes from Te Whāriki (1996) chosen as of particular relevance to Annabelle

Exploration, Goal 4, Questions for reflection:

In what ways are children actively encouraged to try things out, in what circumstances are they left alone while they do this and what does this contribute to their learning?

What genuine opportunities are there for children to change things and explore the consequences of their actions? Children have ***opportunities to***

explore and discuss how things change and how they can be changed. For example from hot to cold, from wet to dry or from soft to hard (my italics and bold), (p.90).

Researcher analysis

Note the new language in the teachers' records of their observations, related to sociocultural theory: revisiting ideas; recording/describing processes; identifying Annabelle's thinking and understandings.

While the learning outcomes for both Kaleb and for Annabelle were chosen from *Te Whāriki,* the latter set seems to have a more sociocultural foundation. At this stage of their use of *Te Whāriki,* the teachers found the "questions for reflection" and "examples of experiences which help to meet the learning outcomes" more useful in their planning, than the learning outcomes themselves.

Plans developed specifically for Annabelle

Opportunities to watch how plants/animals grow and talk about what they need for their well-being, e.g., create a garden; trip to plant centre; making cress people (extend these ideas into group activities).

1 Watching ice melt.
2 Mixing ingredients together.
3 Watching plants grow, etc.
4 Extension of sand and water play, by providing new resources (e.g., little water play).
5 Encourage children to **predict, estimate and describe changes and patterns through drawing, mapping ideas, plans, etc.**
6 Opportunities for group cooking, making playdough.
7 Providing resources to extend dramatic play, e.g., mixing pots, egg beaters, bottles, *etc.*

Note the new specific emphasis in their plans for Annabelle, as compared with those for Kaleb, such as "...talk about...; and to predict, estimate and describe changes." There is

also a new, clear emphasis in the teachers supporting learning through "drawing, mapping ideas, plans ...", involving children in planning for their own learning.

Observations by teachers of Annabelle, during the implementation phase

- 12.5.98: Began digging garden in whānau group; A. used small spade to dig up weeds. A. enjoyed working **co-operatively** with G, today, mixing sand, water, bark, making mixtures in sink and sand pit
- 14.5.98: Continued with garden digging and raking. A. talked about pulling out weeds – very protective of garden if anyone walked on it. A. stamping with stamps and pads in "office area". The stamps were sun and moon and A. talked at length about the night sky and that one night she saw lightning in the sky. Described lightning as being like fire and acted out for me (the teacher) what would happen to a person if they were struck by lightning – shuddered and had stiff arms and legs, etc. Excellent impersonation. **(Teacher) challenged ideas and queried what she knows about lightning, extended ideas using books from science centre and the ENCARTA (see Glossary) programme on the computer. Printed off a picture.**
- 15.5.98: A. asked to work on garden today; used small rake from shed to rake dirt.
  A. and J. mixing in sand pit, making mixtures extended by providing a large mixing pot and spoon. Mixture turned into "wombat stew", adding several ingredients. Sang song "Wombat Stew".
- 18.5.98: Introduced "little" water play this morning. Enjoyed trip to plant shop today; excited in car on the way, A. noticing the moon still in the sky, commented "the moon is following us". **I (teacher) asked her questions about what she knew about the moon, talked about the moon following us in its car that's why it was out in daytime.**
- While still in the car, asked A. what types of plant she wanted from the plant shop; A. replied "sausages and watermelon and strawberries"; we found melon seeds at the shop.
  On the return trip to the M. kindergarten, visited the F. kindergarten. A. immediately found the water area, with boats and canals; enjoyed little fishing rods and boats.
- 25.5.98: A. brought Dad and grandparents in to show the vege garden – discovered it had been eaten by slugs over the weekend. Dad offered suggestions for resolving the slug problem. Able to address this later on with A., with dialogue about what she knew about destroying slugs – she became distracted with "Hokey Pokey" being made – joined in with this – I (teacher) was able to be flexible and allow her to make her own choice; followed through later on when she was ready with salt in the garden. A. talked about the snails/slugs sneezing with the salt, then they would go away (maybe relating to pepper?)
  Read Wombat Stew book at mat time (large group); A. sat up front, repeating parts of the story.
- 26.5.98 Painting at easel; different patterns and shapes with blue and pink paint. When asked about painting, A. replied that it was her; **asked more**

questions; commented to A. that this painting looked different to her usual paintings of people; A. replied "*this is my dress*" she had painted in detail of patterns, buttons, sewing on her dress, skivvy, etc. painted – and added a small head at the top.

- At wood bench, working with the magnets – exploring the properties of magnet and testing it on wood and metal. Used magnet to tidy nails away. Playing alongside J., **working on their project, problem-solving** with a wobbly cable reel; in the end moved to the bench.
- A. cooking "Wombat Stew" in the sand pit, dressed up in costume with her scarf around her head.
- A. asked for pink scarf to be tied in her hair again. Joined with group in sand pit making "Wombat Stew". Made "Wombat Stew" in large group at mat time.
- 29.5.98 Invited A. on a magic carpet ride, to extend the idea of magic; went on a journey on a train, in a swamp, stuck on alligator, etc. **Carried on idea outside**

Dialogue between teacher and Annabelle

T: *What are you doing A.?*
A: *Umm...I'm just burying my garden so it can grow out of the sand*
T: *you're burying...*
A: *The sand always covers it*
T: *You're burying your garden so it grows out of the sand.*
A: *Yeh.*
T: *So you're creating a garden then.*
A: *But it's not real, the plants are only pretend.*
T: *What kinds of plants have you got in your garden?*
A: *Ummm carrots and cornflower...and*
T: *and cornflour, that's interesting*
A: *...and (?) and strawberries and sausages and...*
T: *You've got sausages growing in your garden? How do they grow?*
A: *and I've got watermelon.*
T: *Now I know about, I know about strawberries and watermelons and looking after them in the garden, but how do you look after a sausage growing in the garden?*
A: *I don't know ...I'm thinking.*
C2: *You have to keep steam on it, hot water every day.*
T: *Hot water on sausages to make them grow?*
A: *And hot chillies.*
T: *What does the water do?... And you're growing chillies too. I don't know much about growing chillies. What do you know about growing chillies?*
C2: *They're just, umm, hot, but they're not hot inside.*
A: *Um, yes they are. We've got some.*
C2: *It's hot when you eat them*
A: *But we've got some at home. Mum said don't eat them (?) cause they a very hot; you've got to wait till they cool down.*
T: *They are very hot chillies, aren't they? I wonder if they do cool down? Tell me what you know about growing chillies in the garden. How do you look after those?*

A: *You have to grow them and water them every day.*
T: *You have to water them?*
A: *So they grow really big.*
T: *Tell me what you know about growing sausages; I'm interested in the sausages!*
A: *I know, I know all about growing sausages in the garden.*
T: *Tell me what you know about growing sausages in the garden.*
A: *(?)*
T: *What do you know about growing sausages? Mmmm??*
A: *This is the magic...any.*

Teacher Evaluation of the Planning Cycle for Annabelle

> During the time of the planning cycle Annabelle has had several opportunities to engage in **collaborative** socio-dramatic play, which have carried over several days enabling her to reflect and extend her ideas further, especially Wombat Stew. Annabelle's strengths have come through quite strongly during this process, including her verbal and non-verbal skills. There have been several opportunities for **extending Annabelle's ideas** and **understanding,** e.g., through planting and talking about gardens, also through socio dramatic play, magic carpet rides and through her art work. In each of these areas adult intervention has enabled Annabelle's ideas to **be scaffolded through language** and providing extra equipment. Annabelle is now able to **reflect** on her ideas and through this process is able to support **(scaffold)** the **learning of the peers around her.**
>
> (My bolds, indicating examples of the teachers' language used for *Annabelle* that were absent in Kaleb's evaluation.)

Researcher analysis

The teachers were now interested in what Annabelle had to say, as a 'window' into her thinking and understanding. They were providing for her interests both spontaneously and in their collaborative project plans. While listening to what Annabelle was talking about, Lauren was now tuning in to her thinking and actively listening in order to extend this. The teaching team together reflected on these dialogues, about what they might be revealing about the children's understanding and how they might revisit the topic to extend this thinking further.

The teacher (Lauren) in the above dialogue recognised her struggle to stay with Annabelle's thinking rather than digressing in the direction of most interest to herself

(growing sausages). This issue was recognised as one of teachers' use of power, which they were working to share with the children.

Not until the transcription of this teacher-child dialogue is the teacher's voice recorded alongside those of the children. The previous incidental records included impersonal mention at times, of what the teacher had talked about, but usually recorded only the child's actual words. The inclusion of their own voices in their dialogue records provided the teachers with a ready tool for reflection on their own skills of dialogue with children. The team's analysis of this teacher's dialogue with Annabelle led the teachers to several understandings of their skills in questioning and of their own use of their power with the children, as identified under Proposition One in the following section.

5.4 ITEMS FROM MANUKA IN PROPOSITION ONE

Proposition One: *Teachers scaffolding children's learning require the use of many interactive skills.*

In their writing about their programme of research, the Manuka teachers themselves identified the interactive skills they used in their scaffolding of children's learning as:

- Maintaining warm relationships with children.
- Questioning techniques: hearing children; aware of their interests; getting to know what children think whether or not they are currently the focus of planning; not interrupting them; allowing silences; following children's leads.
- Revisiting children's ideas.
- Collaboration between teachers, children and parents in their community of learners: dialogue with each other, maintaining trusting relationships; communication during the session.

The metaphor these teachers used was the broader, generic one that was discussed in Section 2.3 as the commonly understood sense of scaffolding used in the early childhood sector. The following sections provide examples from the Manuka records of

each of the above (bulleted) sets of interactive skills identified by the teachers as examples of their scaffolding interactions with children.

Maintaining warm relationships with children

As discussed in Chapter Two, (Smith, 1995; Stipek & Byler, 1997) the basis of all interactions between teachers and children is the relationships developed between them. A warm social climate combined with interactions that are frequently child-initiated, are identified in the literature as prerequisites for supporting children's learning. The teachers at Manuka were each responsible for one-third of the group of children in each session; the whānau teacher for each group maintained her group's individual portfolios and was responsible for specific planning for each of them, including conducting a whānau group interaction session each day.

It is difficult to record examples of warm relationships; though obvious in practice, it is often the tone of voice the teachers use with the children and the physical and eye contact and smiles that maintain the relationships. Because they knew the children so well, especially those in their whānau groups, these teachers took care to cater for children's affective environment. The following example is one of many in my transcriptions, indicating the depth of reflection that led to ongoing support for individual children.

Susan: *Yep, 'cos this child is actually needing a bit of self-esteem building and confidence and he's a bit of a loner. And I know he would respond to my one-to-one. And he's got quite good thought processes, so I think we could really go with him, in this planning.*

Questioning techniques

> *We as professionals are much more aware of our questioning techniques – it is a form of self- and peer-appraisal – listening to each other's transcripts or seeing how we work with children on video.*

Hearing children; aware of their interests; not interrupting them; allowing silences; following children's leads.

We are becoming more skilled at listening to children, really hearing what they are saying. We provide more silences and spaces for children to think and to respond. We are:

- *picking up on their ideas*
- *being aware of their interests*
- *not thinking for them or interrupting*
- *feeling comfortable with silences*
- *following children's lead rather than getting them to follow our agenda.*

Getting to know what the children think, whether or not they were currently a focus of planning

Early in their action research the teachers struggled with what they perceived at that time as possibly denying the other children attention while they focused on the current focus children. The following quotes answer this struggle for these teachers:

Through using audio- and video-taping and having in-depth conversations, we are now much more focused on how different children process information.

We are learning more about other children (not in the planning cycle) who join the group because they have similar ideas, interests and schema.

Although the project starts with 3 children it involves a much larger group because ideas are extended, move to different areas and other children come on board.

Revisiting children's ideas

We are learning to revisit children's previous ideas/interests, to extend their thinking about the topic.

Susan: So I wonder if I went to Cameron and asked him to draw me a picture of these enormous dogs?
Barbara: Maybe you could read out that conversation to him?

Chloe: I could just see what she was thinking. They're squashed. They couldn't come out 'cos they were in the ground.
Barbara: I wonder if she's been told not to stand on the garden, 'cos the plants...who knows...or she thought of that herself.

Susan: That's what that's saying, isn't it? Each other's ideas or continued a line of thought

Projects were displayed on a project board (see Glossary) and records were kept showing progression of the project. This allowed ideas to be revisited. It also allowed children to "re-cognise" (Meade, 1995b, p.10) their understanding of ideas.

Collaboration between teachers, children and parents

Barbara: So, is your impression at this stage that you know the children better in spending more time in talking with them about their interests because they've been part of the planning cycle?
Lauren: Oh yes, much much more.
Jackie: 'Specially since we've been finding out about schemas, because we always need to know what they're thinking about so we can extend it.
Susan: Yes.
Jackie: We've got to talk to them more. You've got to listen to what they're saying so you know what they're thinking.
Susan: And parents are more onboard now. Now that we've done several weeks of individual planning, the parents have a better understanding of what we're actually doing – they're actually totally involved in it.

Dialogue with each other

The teachers engaged in collaborative observation, planning and implementation for each child.

Susan: We are now much more 'in tune' with each other's teaching styles and respect the different strengths we have to offer the team.

Communication during the session

The staff members developed signs they gave each other, when they needed to be left uninterrupted, if at all possible, with the current group of children.

Chloe: Well, it gave me an opportunity to really explore a part of the curriculum that I hadn't really taken time to do for quite a long time. Because we had an unspoken agreement that, if you were doing the taping you could really just go for it, it was sort of an unspoken rule. But that's what we did. It just allowed me to get engrossed, knowing that I wouldn't be interrupted. It allowed me to work with that small group, because there was a small group of children, not just Kris or Kaleb.

This first case study centre provided a firm basis for Proposition One, beginning a list of teacher skills that contributed to the teachers' scaffolding of children's learning. The

metaphor of scaffolding that these teachers used implicitly, was the broader, generic one, as this was understood in the sector. Subsequent case studies would both extend this list of skills and clarify the concept of scaffolding. The interactive skills identified by the Manuka teachers as contributing to their extending of children's understandings were all located in the interpersonal plane of activity (see Table 5.1). These interpersonal skills included those demonstrated through good relationships and dialogues between teachers and children and the recording of these, through the teamwork between teachers and their collaborative planning based on children's interests and strengths and through the involvement of parents in their child's programme of learning at the kindergarten. As indicated in the notion of spiral reciprocity, the three planes of activity do not exist in isolation from each other. The Manuka teachers' successes in improving their skills in the interpersonal plane was concomitant with their improvements in both the institutional plane, the subject of the following section, and in the personal plane, the subject of Section 5.6.

5.5 ITEMS FROM MANUKA IN PROPOSITION TWO

Proposition Two: *Scaffolding learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.*

The supporting processes, including the content knowledge research of topics related to children's interests, which the Manuka teachers identified in their scaffolding of children's learning were:

- Realising the importance of children learning from and with each other
- Researching topics of children's interest
- Transcription and analysis of teacher-child dialogues and developing projects
- Planning based on children's interests; developing and displaying group projects
- Revisiting children's ideas
- Learning when and how much dialogue to record
- Collaborative observing, planning and implementing
- Involving parents in greater participation in the programme

This section provides some examples of each of these supporting processes the teachers developed or refined during their professional development.

Realising the importance of children learning from and with each other

Peer scaffolding was discussed at several meetings with the staff, who made some major changes in their thinking about children learning from and with each other, during the process:

> *There's a lot going on at the moment, in this concocting of potions of stews and things, they are together and they are developing and bouncing off each other*

Using the concept of a "community of learners", these teachers re-framed their attitudes towards peer learning. Rather than the copying of other children being viewed as "cheating" or mimicry, these teachers were grappling with the sociocultural belief that children co-construct their knowledge and understandings in their social interactions with each other.

Chloe: *Jessica often imitates what Anita says. Like, I've got just a little note about a conversation they had and Anita would say something and Jessica would repeat it back... like, I sort of thought it was, Jessica is not exploring her own thoughts and ideas, but maybe she's just affirming to Anita that she's heard her.*

Susan: (with reference to a reading on peer learning): *That's what that's saying, isn't it? Each other's ideas or continued a line of thought.*

Lauren: *One thing I've noticed since I've been looking at schemas is that I've noticed how children scaffold each other's learning. And I have actually noticed that before. Like, a child will be sitting at the table and doing a painting and using little resources and whatever we've got and a child will come and sit beside them and do just about an exact same painting.*

Barbara: *And that's scaffolding.*

Lauren: *Peer scaffolding. And that happens heaps, especially if you see a schema. But we weren't actually aware of that until we looked at schemas. Were we?*

Chloe: *No.*

Barbara: *One of things that I noticed on the video, children are constantly watching each other and modifying their behaviour compared with what the other children are doing.*

Lauren: *Yes. In like small groups, that would be whānau groups. For music sessions or whatever, we would be scaffolding them.*

Researching topics of children's interest

When the teachers tuned in to the topics of the children's interests they found they needed to research these topics themselves, to be able to extend the children's understandings:

> *We use all resources available to extend project work – we go on mini excursions, use the computer, library and any other resources we can think of. We have also set up a database of parent' strengths and interests to allow us to resource their skills to extend children's ideas and project work. Children are now asking us to use the computer if we ask questions they are unsure of! Often as teachers we have to go on a learning curve before we can give children more knowledge and often we learn together.*

Transcription and analysis of teacher-child dialogues and developing projects

> *One of the main ways we extend children's thinking is through taping dialogue and analysing discussions and building projects around their ideas. It has brought a theoretical approach back to our teaching. These theories complemented our planning processes and empowered us to move ahead in our work with children with the confidence that our method and system were founded on current and relevant theory.*

Planning based on interests; developing and displaying group projects

> *While the main planning cycles are being implemented, the other children in the group are being extended through mini-projects that may last up to several days, even weeks, that are based on their interests. Or a child may piggy-back their experiences on the planning cycle of another child, ie the planned experiences for a child in the planning cycle may be of interest to another child or group of children. Projects are displayed and records are kept to show progression of the project. This enables ideas to be revisited. It also allows children to recognise their understanding of ideas.*

> *We have found that project work can involve many children. Even though it may start with a few children, others with similar interests come on board – very similar to children with the same schema working together.*

Many skills and processes contribute to the development of a project with children, including all those listed under each of the propositions. Manuka teachers already had good skills in identifying interests and developing and displaying projects. Finding children's interests means more than observing for the activities they carry out most

frequently during their times at the early childhood centre. Teachers identify what captivates children's attention through observing how they play with equipment, what they talk and think about while playing and through talking with their parents about the activities they share with their families. Kaleb's and Annabelle's interests were influenced by activities that were valued in their homes, Kaleb's related to his father's occupation as a refrigeration engineer and Annabelle's to her parents' and grandparents' interests in gardening.

Developing in-depth and ongoing projects involves several constituent stages, which have been expressed by Helm and Katz (2001) as three phases: beginning the project; developing the project; and concluding the project. At the time of our work on projects, the teachers at Manuka and I did not have the advantage of the information in this text and their projects were not expressed in the terminology of "phases", "anticipatory webs" (from phase one) or "culminating events" (from phase three). However, these teachers did conduct their own research on topics of the children's interests, increasing their subject and domain knowledge; their project walls displaying the projects were in effect their culminating events (See Appendix D5 for the Helm & Katz, 2001, project phases, adapted to the New Zealand context). Cullen (1999) discussed the importance of teachers having domain and subject knowledge to be able to extend children's knowledge bases. She was also concerned that a focus on children's interests would not necessarily also provide such extension in knowledge of specific curriculum. At Manuka, the project approach provided teachers with the motivation to find out more about a wide variety of topics, in relevant domains of knowledge, in response to the children's interests.

Revisiting children's ideas

By the end of their professional development, Manuka teachers were aware of the value for children's thinking of returning to dialogues they had had on previous occasions, whether or not the child was a current focus of planning; they also remembered conversations recorded some time in the past and considering the value of rekindling a child's previously expressed interest:

But there was a conversation I had with a child named Cameron that's transcribed somewhere, I just need to find it. Way back, last term and he's quite interesting, he's in my whānau group and I just thought that I might go in there and start talking to him about, he was talking about dogs that were taller than his father, that kind of conversation and pick up on that and see where it leads and actually not put him through a planning cycle but actually do a project with him. But just for experiment's sake and see where it leads and tape it and...I'll keep my other one in my planning cycle. Yeah, 'cos I just want to try it.

Learning when and how much dialogue to record

Susan: *but I think we will get that more fine-tuned as we go. We will know when to switch the tape on and when to switch the tape off. It's a learning thing.*

Barbara: *That's my concern: that you are doing work, when you observe, if you're not going to use it.*

Lauren: *I think taping is an easy way to collect information, it's just getting the information you need. You've got to write it out anyway, but it does take a long time. I only did part of mine and some of it I've got some valuable stuff on it, but I know there's more on the tape to write out.*

Susan: *And plus it's the physical thing, like, you know, you can get into a project over here with a little group of children, but meantime over here somebody's sawing down a tree.*

Lauren: *Yeah.*

Susan: *And you can't totally switch out. I mean it would be so good to be able to do that and just focus in.*

Collaborative observing, planning and implementing

When a teaching team is working together to plan for outcomes for children, it is essential each teacher is able to trust and communicate readily with the others. While the whānau teacher has the major responsibility for collecting the data on the focus child in her whānau, all teachers collect observations on all the children in the cycle. At Manuka, plans for extending each child were made in consultation with the full team and transcripts of dialogues and interactions become part of the data collection. Many early childhood teaching teams have duty rosters that include inside, outside and roving duties, and each teacher needs to be able to contribute to implementing plans for children in whichever area they and the children happen to be playing during these duty times.

Teachers have a trusting relationship with each other

Teachers need to be supportive of each other, so that reflection and challenge can be welcomed and valued.

Susan: *So we wouldn't have a problem taping them, I don't think.*
Chloe: *No, that's exciting. One of the things from our last discussion that I found really interesting, we were talking about the questioning and children asking questions and whether they want an answer or whether they're seeking affirmation of the knowledge that they have – and just that whole ideology in my head, it's just been going whoooo I'm just spinning out on that whole concept. When children ask me questions, I'm thinking now, are they wanting an answer or they wanting some affirmation of knowledge that they already have and it's quite incredible.*
Barbara: *Have you asked them?*
Chloe: *Yeah. I've asked them what's the reason that they were asking me that question. You know, I've tried,* ***I've been practising, learning different ways I can.***
Lauren: *I think the whole process just makes you more conscious of the way that they talk and the questions that you ask.*
(Author's bold)

It requires a degree of maturity and confidence for a fully qualified teacher with several years of experience, to be able to admit that she has needed to have "*been practising, learning different ways I can*" with her peers. The possibility of such openness being perceived as a threat would be high in a centre consisting of staff with a variety of levels of qualifications. A mature teaching team is flexible in its application of agreed procedures:

Lauren: *We have a plan, which I haven't really been following, I tend to ignore what we plan as a team and do what's appropriate for the day so I can confess up now. Yeah, I tend to pick up on what's interested them.*
Barbara: *So you plan the week ahead, do you, for whānau groups?*
Lauren: *Yeah I think that's almost ...*
Susan: *That's actually as a stop-gap in case you get to the end of the morning and your brain's dead and you can't think. But if you've got something going you just go for it. Yeah.*
Barbara: *So the whānau group might be the time when you would go back to this?*
Susan: *Someone in my whānau group might bring a caterpillar or a moth or something so therefore the planning that we did on Friday goes out the door and you focus in on what happened today.*

Here, Susan and Lauren both "confess" to sabotaging the "team's interpretation of the whānau planning". It was this gentle give and take, sometimes in a joking tone, but always with the intention of reflecting, clarifying, debating, which characterised this team's interactions.

Chloe: *Like, that is a dilemma, an issue, but we're not superhuman and I can only do one thing at a time and...*
Susan: *I thought you could do 10 things!*
Chloe: *You can tell me everyday that I can do everything at once, but I know. But it's that sort, those are the issues for me as a professional.... "I'm thinking now, I'm stopping and I'm thinking now are they...or are they...?"*

The teachers were each working at a different level of understanding and expectations, especially at the beginning of the year, when a new staff member had joined the team. The senior staff member showed considerable restraint on several occasions, as her ideas had to be postponed to allow the other teacher(s) to reach her level; this was done with good humour:

Susan: *Yeah. That would be interesting, I think. See, I thought the reason that we were doing this was that, so that it would help us to figure out how children are thinking.*

Chloe: *Identifying the reasons why dialogues are interrupted. Listing what some of them are and then perhaps coming up with some ideas or strategies that we can put in place to eliminate them or reduce the invading influence that they have.*

Susan allowed the discussion to continue in the direction of Chloe's interest, at least for a while:

Susan: *But I'd like to go back to that original thought that we had when we started. Like finding out how children think. I really would, you know, I don't know how you'd do it. But that little conversation that I had with those kids. They were talking about flying through the clouds. They had a whole lot of concepts that were really amazing. They'd been in an aeroplane and Cameron – his dog was so big it went to the sky and he couldn't reach the lead – and in my thought I was thinking, well, maybe he was little 'cos I asked him how old he was when those dogs were big. Maybe, when you're a little baby, dogs are enormous. Or whether it was fantasy because they were up to the sky but his dad could reach them but he couldn't. I'd like to find out how or what he was thinking.*

Barbara: *And I'm wondering again, (about) the Reggio Emilia idea of picking up on the child's interests and ideas and the children getting into the habit of exploring their ideas with each other and that becomes a project that is ongoing. I'm wondering if that is one way that you would be able to pick up on the children's ideas and extend them.*

Susan: *So, to have the children sourcing information from other children?*

Barbara: *Somehow you need to use these snippets of conversations that you've got. Any of them could be the beginning of a project if the children showed enough interest.*

Lauren: *I'm just thinking about that drain and that pump and things Like, Cameron, he started a lot of conversation about how pumps worked and then that moved on and the next day I brought a pump from home. But he talked about the car battery and that sort of thing to make a pump with and I could have brought a car battery or something like that, couldn't I? To extend that.*

From the outset of our work together Lauren had been adept at providing equipment to extend children's activities. Now she was doing so in response to children's expressions of their understandings and ideas.

Involving parents in greater participation in the programme

Finding time during sessions with the children, both to engage in in-depth dialogue and to record some of these dialogues for future reflection, was an issue. A solution that included the parents in their programme in a more consistent way provided a real bonus in valued parent participation:

Susan: *But we're, I think as a result of this, we've put this newsletter out to parents, haven't we? We've done that since Barbara was here last time, eh?*

Chloe: *Remember we talked about freeing us up more and using our parents.*

Susan: *And we've got parents coming every day. And we were specific, weren't we, on what we wanted.*

Susan: *We said to them that we wanted to tape with children, we wanted to do profile work, observations for task cards and we named these things that we were actually doing with children and we said, we want you here to help with process cooking, screen printing, pushing children on swings, reading books and actually wrote the specifics.*

Chloe: *Cleaning the animal house, which we thought nobody would do. And they're all rushing to do it.*

Barbara: *It's something they can do.*

Chloe: *Yes.*

Chloe: *They're user friendly. Like, we've got parent-helper notes on the back of the process cooking so they all know what to do.*

Barbara: *So they know how to interact with the kids?*

Chloe: *And how to extend the children. Like, we had these systems to allow that to happen but we've never fully utilised it. So now we just utilise it.*

Susan: *We have also set up a database of parents' strengths and interests to allow us to resource their skills to extend children's ideas and project work.*

Susan: *We have found that families are much more involved because often conversations are related to experiences out of kindergarten, so we need to check in with families to extend these ideas. Families are able to extend ideas at home because they are involved in the process happening at kindergarten, e.g., Mum has new baby, child is in socio-dramatic play at kindergarten – feeding, bathing, dressing baby. Parent is invited in to bath baby. The 5 goals in Te Whāriki are met through one project with one child but approximately 15 other children have become involved in the project.*

Susan: *Parents/Whānau are now much more involved in the programme and are as excited as we are about learning outcomes for children.*

As predicted in Proposition Two, Manuka teachers demonstrated processes that they either had in place at the start of our work together, or developed as a part of our action research work, to support their skills of interacting with children. These processes, in the community/institutional plane of activity, included routines and systems developed for programme planning and record keeping in order to support the teachers in hearing the children's voice, and researching the content knowledge of topics related to children's interests. Evidence of the spiral reciprocity between the planes of activity was seen in the development of a modified team philosophy of learning (in the institutional plane), especially in relation to their attitudes towards children learning from each other, and in the ready inclusion of many children in a project (in the interpersonal plane) that was originally planned to cater for one child's specific interests and strengths (in the personal plane).

5.6 ITEMS FROM MANUKA IN PROPOSITION THREE

Proposition Three: *Facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children.*

The expectation is that change will take place as a result of professional development. The teachers and I sought to document changes both in their philosophies of learning

and teaching, and in their interactions with children. In practice it was sometimes difficult to identify whether thinking or acting came first. At times reflecting on how they interacted with children was the impetus for changing future interactions, at other times their experiences of really listening to the children through recording their own dialogues with them led to a shift in teachers' beliefs.

The programme of co-constructed research at Manuka

Over a period of nine months, from September 1997 to June 1998, at 3- to 4-week intervals, I met with the three teachers in their kindergarten, usually at the end of a session. According to reports from the teachers themselves, often this pending meeting would be the catalyst for one, or all the teachers to produce some data for analysis and this had on some occasions occurred just before my arrival. At the end of each session we would agree on what they chose to achieve before the next meeting and on any resources that I could supply either before or at the meeting. I offered to make myself available to record their interactions with children on video or audiotape and where this happened I provided the record and/or a transcript for analysis at or before the next session.

Although at the outset of our professional development none of us knew in what direction this development might take us, we were all committed to working on understanding children's thinking in order to extend this. My inclination at the beginning of our work was to help teachers identify children's levels of thinking and types and levels of their own questioning, to support children in working at higher order thinking skills (Bloom, Englehart, Furst, Hill & Krathwohl, 1956; Tough, 1976) (see Appendix D6 for examples of the adaptation of theoretical tools for centre use). However, according to the Manuka teachers, these suggestions "fell like a lead balloon". In analysing the interactions with their focus children, the most useful support processes were:

- Readings of chapters from Hendrick (1997), especially Cadwell and Fyfe's "conversations with children" (pp.84-99). This chapter provided support in analysing dialogues, for "children's questions, concerns and ideas that could be the focus of further investigation or exploration" (p.91). The Manuka teaching

team identified with the points made on "having good conversations with children" (p.89) and with the example of planning the curriculum based on the conversation about autumn leaves (pp.91-98). They also appreciated the section on potential "barriers" to engaging in planning for focus children (pp.87-89), since these were precisely the barriers they had themselves identified. These barriers are identified below (this section), in the teachers' own analysis of their action research.

- Analysing their own dialogues with their focus children. With very little input from me, teachers expressed concern that they were not addressing children's expressed interests, or not following these through to further exploration; they chose to record their own dialogues with their focus children, which were transcribed for the purposes of analysis.
- Analysing their planning records. Through discussion of their written plans and observations the teachers identified that they were quite uncomfortable with the notion of intervening in children's play and thinking. Through this analysis they were able to address their conflict between their stated commitment to sociocultural theory that supports scaffolding through intervention and their previous commitment to non-interventionist "free play".

The interactive skills of scaffolding learning with children identified by the Manuka teachers have already been discussed under Proposition One (Section 5.2). The current section reports examples of the teachers' reflection on their changing philosophy and practices and some of the issues worked through in the process of our action research. The headings in this section are:

- Experience leading to change in philosophy
- Parents reflect on the centre's changed processes.
- Identifying barriers
- Benefits for focus and non-focus children
- Teachers articulate their planning processes and philosophy informing these
- Changes in teachers' planning for interactions with the children, with each other and with the parents
- Dissemination of learning with peers in their professional community.
- Commitment to and engaging in reflective dialogue

Experience leading to change in philosophy

The focus child planning processes at Manuka included: observations of the children both before and after planning specifically for them; choice of learning outcomes and questions from *Te Whāriki*; recordings of children's comments and dialogues with the teachers; the plan to extend the focus children's interests and strengths, during specifically planned group activities, and the teachers' evaluation of this planning cycle.

Together, the teachers and I identified that the centre's programme at the start of their programme of professional development seemed to have been based largely on the developmental paradigm. The teachers themselves wrote about their own changes in philosophy and practices, through their engagement in this project.

> *We had already established an effective system of scaffolding children's learning through equipment and resources – a Piagetian approach to our work with children – encouraging children to be independent explorers. On reflection, we decided that we wanted to scaffold children's learning through conversations in the same way as we were scaffolding the learning taking place with resources.*
>
> *We already had systems in place to collect ongoing data on children's strengths, interests and schema through different observational techniques, profile work and documentation of milestones during their time at Kindergarten. This is done in consultation with parents. We decided to implement a system of taping conversations with children. This allowed us to explore their ideas in more depth and allowed children's thoughts and ideas to be revisited again as topics of discussion or carried further to extend children's thinking and understanding. This often takes the form of a project or mini project. Dialogue, project work and displays are an important part of the Reggio approach. Furthermore, the Reggio Emilia approach to learning, is a system that complemented our beliefs about how children learn.*
>
> *Vygotsky's work promotes ideas of young children learning by putting together insights from diverse first hand experiences. Every piece of learning is based on an earlier experience. Vygotsky makes reference to the process of co-constructing children's learning. He promoted the idea that children could do more things with others, than by themselves. Our children are encouraged to represent their ideas in their creative work and the inclusion of relevant excursions to support and extend their ideas has become an integral part of the programme. As we researched further into the work of Vygotsky, we encountered the Zone of Proximal Development and the work of Bruner (on scaffolding). When applying the theory to practice, we felt*

better equipped to scaffold children's learning as we were building on children's previous experiences and becoming increasingly aware of common projects/ideas occurring over and over again.

Parents reflect on the centre's changed processes

Anabelle's mother had wondered, as had the teachers, what the effect on children would be after they had been in a planning cycle and were no longer the major focuses of such planning:

I was worried that after the special attention, she might feel dropped, but instead, she seemed to absolutely thrive.

This issue is also addressed by the teachers below, under "possible barriers".

Identifying barriers

Examples of teacher reflections are recorded as they attend to some perceived possible barriers to the ways in which they wanted to work with children:

Chloe: *Because even if we could establish what some of the invading things are, like why we're not, or why in some instances when I read this I could have picked up with that child, why didn't I? What could I have done differently? What could we do to allow that to happen more effectively in our programme? I think that's sort of an area I'd like to look at, as well. Because we have a busy programme and whilst you've got a million and one busy activities happening pertaining to your programme there ain't much time left.*

The seven barriers to having conversations with children, as identified by Cadwell and Fyfe (Hendrick, 1997, pp.87-89), have been overcome by our teaching team in the following ways:

Is it fair to focus attention on a small group of children?

We have found that although the original focus is on three children, the group becomes much larger as children with similar interests, schema, join the group and participate with equal status. There are mini projects taking place with other children who are not in the planning cycle to extend their interests.

Noise

This is an ongoing problem – especially when taping, as it makes transcribing difficult – but we try to tape conversations in 'quieter areas' and use a lot of sign language with colleagues to ensure interruptions are kept to a minimum.

Expectation

The more used to audio and video taping that children get, the easier it becomes. The children are now seeking us out to have in depth dialogue!

Rationale

Before you can feel comfortable trying new things there has to be discussion amongst team members – we needed to know learning outcomes for children were being enhanced. As a team we agreed to try new ways of teaching and we are constantly evaluating, challenging ideas so that we can all learn together.

Lack of skill

We are supporting each other as we become more skilled in conversation techniques and using new technology.

Recording what the children say

We are tuning into the children's thinking and extending them immediately as well as after reflecting on their meanings, with the help of the tape recorder. Now that we have learned to use this technology, it is not really a problem. We have, however, learned that we have to be organised in setting up the taping system at the beginning of each session so that when some exciting dialogue takes place the system is available quickly.

We have also encouraged parents to take a more active role in the kindergarten. They help with the videoing, typing of transcripts and in other areas working with the children, which frees us up to work more closely with children.

Time, Energy and Skill

As always, time and energy are a big factor. We as a team do a lot of work in our own time and contract to spend time as a team on a regular basis out of hours to catch up on videos, transcripts, etc.

An extra barrier

> *Another barrier is the non-attendance of children in the planning cycle because of sickness and also staff sickness. These are negative factors when trying to keep momentum going with ideas.*

Cadwell and Fyfe's (1997) chapter was significant in the development of this team's understanding of the importance of dialogues with children and how to overcome the issues involved in such intense work in a busy kindergarten session.

Benefits for focus and non-focus children

Unless children other than those in the current cycle of planning also benefit from the focus children's plans, there would be very little point in putting so much time and energy into one planning cycle based on the interests of an individual child. In fact, there is ample evidence from a variety of sources, that the planning for individual children in each cycle does have major benefits for all the children in the programme and for their interactions with each other. The Manuka teachers discussed this issue as recorded under Proposition Two (Section 5.4): "Getting to know what the children think, whether or not they were currently a focus of planning".

Reports on the long-term outcomes for Manuka's focus children were unequivocally positive. In this next quotation, Susan, the Head Teacher, is discussing outcomes for one of her whānau children who had been a focus child of her planning the previous term:

> *In his project, I've got him just there and he's really come out of himself, hasn't he? He was a real quiet boy, I didn't know a lot about him, he just transferred in this term and he's just blossomed and he had so many ideas, like the stuff we did on the computer about wild animals in the sand pit; and we went to the computer and got pictures of wild animals and tigers and he's just ready to go.*

Lauren: *I've got a project in mind that's come from a child, she's right into gardens and things and I did some anecdotal notes on her last time before I thought about putting her through a planning cycle. Just talking about what you were saying that day about going back to children's ideas made me think she was bringing it up again this term and I've actually got on my tape that I did talk about the predictions that she was making. It was really interesting the things that she was bringing up and so one of my projects was to do a garden with her*

and to look at mapping and that sort of thing and computer draw pictures of what she predicts it's going to be like.

Lauren and Chloe discuss non-focus children in the midst of their planning for the currently focus children.

Chloe: *because nothing and especially that experience, didn't happen in a vacuum. It happened in amongst everything else that was happening in the centre on that day.. An issue that I have is..., for example, there was a couple of children who came to me with what could have been potentially a project. Now, how fair is it to that child for me to deny them the extension I'm giving to this child just because I'm involved in something else at the time.*

Chloe: *But because other children can see how that child you're focusing on is feeding off that attention, they thrive in it and I think they seek it. And it's just bad timing for them. I keep thinking of Felicity, she's in our face all the time, she's obviously there because there's something there.*

Teachers articulate their planning processes and philosophy informing these

This team of teachers was committed to maintaining individual planning cycles for children, from which they developed ongoing projects that involved many interested groups of children. I continued to challenge them to articulate their planning practices and their reasons for this commitment to them.

Barbara: *Every time I say something has to change or something has to give, you say we've just got these planning cycles right; we're committed to this. Do you think there might come a time, if you got the projects running so well, that you might not need to put quite so much emphasis on the individual?*

Susan: *No, 'cos I think the cycles are really good because that's how we find out what children's strengths and interests are.*

Barbara: *That's how you get to know them in the first place?*

Chloe: *I agree with that.*

Susan: *Yeah.*

Barbara: *And the projects grow out of those, usually.*

Chloe: *And I think it's that individual planning cycle time, it's that intense time...if we went through all 45 children and had to rattle off stuff about them, we could. But it's those planning cycle children that we can rattle off more that's not just on the surface.*

Lauren: *And I think too, there's always the same children that get more attention probably than other children and doing the planning cycle, making sure that even those quiet ones don't get missed.*

Chloe: *Their special needs are fed in that way.*

While the main planning cycles are being implemented, the other children in the group are being extended through mini-projects based on their interests that may last up to several days, even weeks, or a child may piggy-back their experiences on the planning cycle of another child; the planned experiences for a child in the planning cycle may be of interest to another child or group of children. Projects are displayed and records are kept to show progression of the project. This enables ideas to be revisited. It also allows children to re-cognise (Meade, 1995a) their understanding of ideas.

Children revisit ideas, though teachers need to watch that equipment is committed to a particular project

Barbara: *My idea of scaffolding is whether or not a child could come back to the same topic the next day and the next day and the same structure and then at tidy up time, do they have to pull everything to bits?*

Lauren: *No.*

Barbara: *And they can carry on and build on that (during the next session)? What was it the platform they built on the other day?*

Lauren: *A pirate ship.*

Chloe: *Yes and that had started on the Friday. And we had a weekend and I didn't actually think it would restart Monday but they came on Monday and they knew what they were going to do. They were continuing with that pirate ship.*

Lauren: *And another one of the boys that was there, everything he does is, like, continuous. Sometimes it was about 2 weeks.*

Barbara: *What about a project that might go on for 6 months?*

Lauren: *Yes. That's fine.*

Barbara: *That can happen?*

Lauren: *No problem. We encourage it. It depends what it's like, though. Like, some things are just, everything's out.*

Barbara: *That's Kaleb and Kraig.*

Lauren: *Yes.*

Chloe: *And some things just need to be put away.*

Lauren: *Kaleb and Kraig go to the shed with the wheelbarrow and they get every resource. They put it all in a place and then they don't actually do anything with it. It's just like the transportation and that's it. They've done their schema. You've got to keep checking. But that can be frustrating.*

Chloe: *And the carpet needed to go away 'cos it just gets really gross when it's left out in the rain. Just the things like that. Because they don't touch them. But if they could put them back out ... they'd still be right, wouldn't they?*

Note Lauren and Chloe's continued focus on equipment and structures such as the pirate ship project. Later in their professional development these teachers became more focused on children's ideas and how they could extend these.

Changes in teachers' planning for interactions with the children, with each other and with the parents

Pre-intervention, the predominant avenue for extending children's thinking was through identifying their schema, followed by provision of extra equipment and materials. As with the scaffolding model, planning to extend schema may not necessarily lead to any more in-depth dialogues with children (see Section 2.2). In fact, staff members spent so much energy on the provision of equipment for extending children they sometimes felt in danger of "burn out".

Susan: *But I also think that we need to think about ways to extend children without having to always be bringing resources in. Because we can't be doing that all the time. We'd just burn ourselves out*

Changes in the documentation and the planning procedures of the Manuka staff provide evidence of the effectiveness of their professional development. Kaleb was a focus of the planning cycle during term 4, 1997, at the start of my work with this team.

> *Kaleb has experience in and ideas about the advantages of big wheels over little wheels, in making "it easier to push" vehicles.*

Although this comment was recorded by the teachers, they did not consider how they might further explore Kaleb's thinking, to provide dialogue and experiences to extend it. They appeared to have no idea they were missing vital clues to the children's thinking. Although the major focus of the staff continued to be on providing extra equipment for Kaleb, there was some evidence they were beginning to think about how to extend his ideas through representation. In a discussion session before this planning, I had introduced the idea of encouraging children to represent their ideas in a variety of ways and especially to attempt to support their cognitive processes through Forman and Fyfe's (1998) "design, discourse, documentation" (pp.239-260) format. The teachers' plan to "encourage drawing of pictures about work such as making a map, if burying in the sand pit" is directly related to our professional development discussions.

On reflecting on the planning cycle for Kaleb, teachers wrote:

> *Throughout the planning cycle Kaleb had opportunities to extend his interests. Providing props and encouragement for dramatic play and his electrical skills went well.*

However, the teachers found that

> *It was difficult to extend his knowledge in electrical sets as he enjoys solitary play in this area. Trying to find out about these skills as Kaleb enjoys independent play with his peers, not adults.*

In discussing the outcomes of the planning cycle for Kaleb, teachers believed that

> *All of the desired learning outcomes were met and will continue to be extended. Kaleb is in an transportation/enclosure schema where he enjoys being inside things or placing things in boxes, etc. There were a variety of resources available for Kaleb to use. He spent a lot of time in the huts carrying out dramatic play roles.*

Note again the emphasis on resources being available to extend Kaleb. These teachers had adopted schema theory to the point of identifying children's current schema and they provided equipment to this end. At this stage of their thinking, they were quite satisfied with their extensions of Kaleb's learning, although they had not attended to his thinking or his ideas. When reflecting on these comments at a later date, one of the staff members was to state that she would "*now know how to extend Kaleb's ideas and dialogues, through listening to what he was thinking.*"

In comparison with their planning for Kaleb at the start of their professional development, nine months later teachers were planning quite differently for Annabelle. Section 5.3 documented the changes the Manuka teachers made towards a socioculturally appropriate and collectively mediated system of assessing and planning for children's learning (Fleer & Richardson, 2002).

Dissemination of learning with peers in their professional community

Evidence for the effectiveness of the programme of professional development was provided in the teachers' presentation of their work to some sixty of their peers, at two venues. These evenings were organised as part of the College of Education's support of the Early Childhood Teaching Associates for the Bachelor of Education (Teaching), Early Childhood programme. At each venue, the full evening consisted of a presentation

contrasting the philosophies and programme implications of Piaget and Vygotsky, from a theoretical perspective, followed by the Manuka staff team's presentation describing their professional development with me and the outcomes for themselves and for their planning processes and the children.

Participants in these evenings reported being "blown away" or even "in orbit", according to their evaluations of the team's contributions. Manuka teachers portrayed their messages stunningly, through the use of overhead transparencies, photographs, re-enactment of dialogues, presentation of several of the children's portfolios and most significantly, through their obvious enjoyment in working as a team and in their real insights into their children's thinking. The success of this presentation led to the Manuka team being invited to contribute again to the process of action research, through writing their presentation as an article for a journal.

These teachers are very unlikely to have published their journal article, or to have made the changes that their article reported, without support in co-constructing their action research. This competent team of teachers was able to capitalise on this professional development opportunity because of their teamwork and communication with each other and with the parents; because of their understanding of theory and its role in practice (all three had Diploma of Teaching, ECE qualifications) and ongoing professional development; and because of their individual abilities and commitment to change. For this well-qualified, competent team, co-constructed action research was very successful, at that stage of their working together.

Commitment to and engaging in reflective dialogue

At times, considerable energy and excitement were generated in response to an idea, or a reading, especially when the teachers realised they were about to embark on a direction described by a new reading. Susan and Chloe became excited that they were "doing it" when they were offered a new and relevant reading.

Susan: *We could do it. That could be done in whānau group situations, like our groups of 15, I wouldn't attempt it with 45. But with the little groups it would be fine.*

Chloe: *I'm just thinking of today. Within our whānau group, we went round and said I'm special because I'm good at...,and they finished it off and I wrote down all the things that the children said. And I was going to get them to do a drawing tomorrow and then we're actually going to revisit it again later in the week. So it's interesting that we're doing it in our small groups. So, even in doing that today, we have actually basically done that framework.*

Realising that it is possible to return to a child to discuss previously expressed interests, was a feature common to all four teams:

Susan: *So I wonder if I went to Cameron and asked him to draw me a picture of these enormous dogs.*
Barbara: *Maybe you could read out that conversation to him?*

Outcomes for children of teachers' professional development

Outcomes for children during their teachers' involvement in the programme of action research will be identified for each case study, in keeping with Rogoff's (1998) description of cognition as transformation in participation. Many changes in children's participation with teachers in activities were recorded as their teachers learned to value children's voices and to make clear links between their observations and their plans for extending the children's learning.

Proposition Three, *facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children* was well founded for these Manuka teachers. The teachers themselves documented their transformation of participation in the personal plane of activity; their identified changes in their philosophies of learning either led to or followed their changes in planning for and interacting with the children. Manuka records indicated that in comparison with their interactions with Kaleb at the beginning of their action research, Annabelle and her groups of peers by the end of the research period were:

- involved in planning for their own learning as the teachers discussed with them possibilities for gardening, cooking, reading related stories and their representation of ideas in art

- empowered to make decisions and to conduct their own experiments, especially related to the gardening project
- engaged in higher order thinking, as their teachers specifically planned to "*encourage children to* ***predict, estimate and describe changes and patterns through drawing, mapping ideas, plans, etc.***" **(p.121)**
- involved in collaborative inquiry with their peers; Annabelle's peers were drawn into her special interest in gardening and wombat stew and others were encouraged to become involved in these activities during the whānau group activities
- engaged in authentic learning experiences, through ongoing projects
- valued, through better links between their centre and home and better communication with both teachers and parents about topics of their interests. Annabelle's parents and grandparents contributed to Annabelle's gardening project, extending her participation in both centre and home settings.

5.7 MANUKA SUMMARY

By the conclusion of their programme of professional development, the teachers at Manuka had embraced sociocultural theory and collected samples of teacher-child dialogues between themselves and their focus children. Such dialogues served two purposes. First, teachers now had a valuable tool with which to analyse their own skills of interaction and sharing of power and second, they were able to follow the children's interests, picking up on a later occasion any of these that seemed important but were missed at the time of the first recording. These teachers also now held a clear vision of the value of the co-construction of learning with each other and with the parents of their kindergarten children, honouring multiple voices in the process.

The Manuka teaching team engaged fully with their action research, to their benefit and to the benefit of many teachers in the region. There were also many outcomes for the children in their programme as the result of this engagement, and the teachers learned to hear and to value the children's ideas and to scaffold their learning, in the directions of the children's own interests and strengths. Because of these teachers' abilities to be flexible and open-ended in their dialogues with children, no issues arose concerning the direction or planned outcomes of the dialogues. The scaffolding model was not

challenged, because the teachers already engaged in a wide repertoire of interaction skills, including the items of the generic definition of scaffolding as identified in the pilot study (see Table 4.2, p.90).

As the result of my work with Manuka I entered my second case study centre with a new wealth of understanding about the scaffolding of children's learning in early childhood centres, and about the utility of planes of analysis for analysing and improving teacher-child interactions.

CHAPTER 6

THREE CENTRES CONTRIBUTING TO UNDERSTANDINGS OF SOCIOCULTURAL THEORY IN PRACTICE

6.1 INTRODUCTION

In this chapter I apply some key ideas in sociocultural theory to specific examples from the programmes of professional development for each of the three remaining case study centres. The chosen examples exemplify the research propositions or the links between the propositions in ways most appropriate for the work of each centre team in their professional development.

The discussion of data generated in my study with Kauri Kindergarten, relates particularly to Proposition Three, that "*Facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children*". The focus of my report for this centre is the contribution of links with other communities practising in the early childhood field to our developing philosophies, and to the teachers' practices of interactions with children. Every teacher belongs to a multitude of overlapping communities of learners and this centre provided examples of interaction between some of these communities, both within and across planes of activity (the personal, the interpersonal and the institutional). Here I develop several examples of the "spiral reciprocity" (Salomon & Perkins, 1998) across and between these three planes. The teachers at Kauri were also the first of my case study teams to question differences in interactions between teachers and children when using the model of scaffolding compared with using the model of co-construction.

Terrace Centre, the least successful in terms of ongoing change in practices and interactions between the teachers and the children in the centre, was central in my study in terms of my development of a model depicting degrees of intersubjectivity in interactions between teachers and children. Terrace had a team of about twenty teachers, of whom only one (Marion) remained engaged with me in the full programme of action

research. Marion and I met with resistance from the rest of her team, when we attempted to describe the changes that she wanted to reinforce in her style of interacting with children. This demonstration of "reification" (Wenger, 1998, p.59, see discussion this report p.26 in Section 2.2) forced me to consider two quite different understandings of the scaffolding metaphor. The first understanding was the narrow, more teacher-directive one that was researched early in the development of sociocultural theory, by Wood, Bruner and colleagues (Wood, Bruner & Ross, 1976; Wood & Middleton, 1975); I have continued to use the term scaffolding for this type of teacher-child interaction. The second, broader and more generic form of scaffolding is the one understood in the early childhood sector by practitioners who have well-developed skills and processes for the sharing of their power with children; I have equated these aspects of the generic use of scaffolding with the co-construction of understandings. At this stage of the thesis, my language changes from scaffolding learning for children to co-constructing understandings with children. This change in terminology was a better description of teacher-child interactions that were supportive of empowering children, within a sociocultural paradigm, in contrast to the teachers maintaining power and control, as is implied in the original scaffolding metaphor.

Haven Centre teachers identified the changes they made as a result of their professional development over the period of this project in their interaction with the children, though it should be acknowledged that not all these changes took place within the project. Haven typified a commitment to the maintenance of a "community of learners" that included the children, their teachers and parents, and a wide community of support agencies to which the management actively sought to contribute and also to utilise. This centre provided evidence of provision for the teachers' co-construction of learning with children on every plane. The two main Haven teachers became especially interested in children's theory of mind, in supporting children's peer collaboration and in recognition of the importance of this aspect of social learning.

6.2 CASE STUDY TWO: KAURI KINDERGARTEN

Reporting from Kauri focuses on the contributions to children's learning across planes and between settings of activity (Rogoff, 1998). Such ideas are central to the tenets of sociocultural theory and my work in this centre provided evidence of positive outcomes

for children as a result of communication in a variety of forms, between people and settings and across space and time.

6.2.1 Introducing Kauri Kindergarten

Kauri Centre was a two-teacher, private, Christian kindergarten licensed under the Childcare regulations. The Head Teacher, Phillippa, the most qualified teacher in my study, held a Diploma of Teaching (ECE) and was at the time of the team's professional development working to complete her Bachelor's degree in Education. The second teacher, Simone, working to completing her Diploma of Teaching (Early Childhood) through a field-based teacher education programme, was the least qualified in my study. Many of the professional development discussion topics arose from the teachers' own studies and at times contributed to those studies. The teachers' studies towards qualifications were both an incentive, and at times, an impediment to the time and energy they had available for their professional development.

In addition to their biblical theme planning, as required by the managing committee, projects that were in progress with the children were on display on the centre's walls. Before their professional development, the teachers were identifying individual children's interests; conducting their own research about these topics to be better informed in extending the children's ideas; seeking further resources to this end; and involving the parents in contributing to the centre programme and in continuing to extend the children's interests at home. However, this planning system was an informal one, based on warm and reciprocal relationships between the teachers and children and the parents. While coping with the demands of their own qualifications and the expectations of their learning community, these teachers had yet to develop clear systems of documentation of individual children's progress. By the end of their professional development these teachers included records of their dialogues with children, photographs of group projects, and children's own representation of their work, in individual portfolios for each child in the planning cycle.

The teachers here were especially interested in developing their skills in extending the children's thinking. Phillippa in particular was, on her own admission, practised in working quite didactically with the children, both during "mat times" and on an

individual basis. She stated this was her way of working with children, even at home with her own older children, where they would often hold "family quizzes"; she was concerned to learn different ways of supporting the children's thinking and learning. Where my first case study teachers identified early in their professional development that they wanted to develop skills of intervening more frequently with children's activity interests to scaffold learning with them, the teachers in this centre identified that they wanted to continue the frequency of intervention, but to examine the quality of it. To hear the child's voice, the teacher needs to provide the space and silence for this to happen, as the teachers at Manuka had previously discovered.

6.2.2 Outcomes of professional development

Phillippa, Simone and I met to discuss current progress and possibilities for change, often after the completion of their week's programme, for two hours on a Friday afternoon, at three- to four-week intervals officially over a period of four months, though these meetings continued on an informal basis for all of 1999. For analysis, both teachers used a radio microphone that I provided, to collect audio samples of their self-chosen best dialogues with their focus children. I also attended several sessions with the children, to video-record interactions between the teachers and their focus children. Once again the most useful tool to support the teachers' analysis of the amount and type of dialogue with children, was reviewing their interactions on video and reading the transcripts. The major questions for these teachers were, "Am I listening to what the child is saying and responding to this in my replies? Am I following the child's agenda, or my own? Whose interests are being incorporated into the projects we develop with the children?"

At Kauri, the teachers and I became increasingly drawn to the metaphor of co-constructing learning with children, in contrast with the metaphor of scaffolding learning for children, as we interpreted these terms. Co-construction at Kauri extended well beyond the walls and fences of the centre, to the teachers' previously held thinking, into family homes and across history and institutional boundaries. For details of Kauri case study see Appendices D2 and D4.

The following ways of co-constructing understandings across boundaries were identified in Kauri's records of their professional development:

- Co-construction across time, for teachers.
- External evaluation as an influence on teachers' action research.
- The influence of artifacts (photos from the past) on learning.
- Co-construction between centre and home.
- Collaborative planning relating ideas from several sources to children's learning.
- Temporary team members contributing to co-construction of understandings with children.
- Learning occurs across institutional boundaries.

Examples are provided in the following sections for each of these items.

Co-construction across time, for teachers

In the following example, Simone, one of the teachers, was able to relate her current thinking about scaffolding children's learning to methods of planning in her work in a previous institution. In making this comparison between the "old way of planning for themes" and the current emphasis on planning for projects based on children's interests, Simone was able to update her philosophy to account for her new practices and beliefs.

Simone: I think it (co-construction) is being aware of listening to them. They have such neat conversations. I remember listening to J. when he was just a two-year-old and we were talking about fire places and we had this wonderful dialogue about the new fireplace and what happened to the old one and just listening to their conversations to hear what they are thinking. It's just to have the time.

Barbara: And I think that you are saying that now if you had that conversation you would think about different things you could talk about.

Simone: Oh, definitely. We would talk about houses. I'd do an automatic webbing, mind-mapping in my head to think about where we would go to from here. I would have realised it was much more significant, think about what sort of fuels you could use, wood or gas or, or whatever. Whereas it was, then, just a conversation. You know what I mean.

Barbara: That's really what I wanted, for you to get that idea of the mind-mapping.

Simone: I can remember in the last centre we just disregarded it.

Barbara: And are you now using it in the same way?

Simone: No, it was definitely theme planning. But it was similar skills and now I can use them again. We are now relating it back to their interests.

Phillippa worked well with the parents in her community of learners, providing many examples of evidence of children's learning as "transformation of participation" between home and centre.

Barbara: Apart from the weed mat, any other examples of how their thinking has changed?

Phillippa: Well, I interviewed them at the end of a week or so later and they remembered, where previously they didn't have any idea.

Barbara: In terms of their learning, that is fairly minor, isn't it? Useless useful information, if you know what I mean.

Phillippa: Well, I don't know, I can't agree with you there. Because there was one boy whose father is building a sandpit and he (the son) said he is going to tell him how to make it. "I'm going to tell him how to make it and I'm going to tell him to put the netting at the end". And that's only one child. There will be other children who might never forget it. I'm thinking of children like Steven and some of those children will always remember that the netting stops the worms coming up.

It is important that teachers get real excitement out of children's interests in seemingly small as well as large topics, and these teachers were certainly excited. They were constantly aware of what children were thinking and sought to extend this thinking through related activities, both spontaneously and in longer term planning.

Simone: They're still digging to the bottom.

Phillippa: Oh, they are.

Simone: Saying that it's weed netting.

Phillippa: The word netting has stuck in their mind and I think it's because it lets the water through. They needed to realise that that is why it doesn't lie at the bottom of the sandpit. But it started off with them thinking it was a ball, a stone, it was squishy, all kinds of things, till now that group actually knowing that's the end of the dirt as far down as you can go. They know that the worms are kept out of it.

Barbara: If they are really interested in the netting idea, have you talked to them about the idea of netting? Where else do you get netting, the different sorts of netting; chicken wire and nets for catching fish?

Phillippa: Well, I went onto the clay thing because when we were digging out they noticed the clay, the different soils so we went on to clay and pinch pots and the parents really enjoyed that, the pinch pots going home painted. And M. comes back and back to the clay table to do more and more pinch pots. I don't know whether he's actually used clay before.

Here I was especially interested in whether Phillippa wanted the children to learn isolated concepts (that the netting let the water through and that it keeps worms out) or whether she really was co-constructing understanding with them. From her responses to my questions, Phillippa would appear to be supporting the children investigating topics of their own interests through providing a variety of media (from digging the sandpit to making pinch pots) in which they could conduct these investigations. Phillippa could be described as working from a post-modern, Vygotskian perspective of understanding, rather than a narrower Piagetian one. The children in the above dialogue were learning many useful understandings about netting and because this was in the context of their authentic interests and activity, at least one child was reported as using this understanding in a later episode with his father. During the exercise of constructing a sandpit at home, this boy directed his dad about how to lay netting in the bottom, telling him what its function was. Rogoff (1998) would call this a "transformation of participation across activity settings" (p.690).

An especially useful technique in the co-construction of our research in this centre was the joint reflection of actual transcripts of dialogues, which occurred on numerous occasions:

Barbara: Well, what could you say? It's at this point when you pick up on the hard/soft. "My Dad dives for shells".
Phillippa: He's talking about the paua.
Barbara: So what could you say that would have been really tuning into his thinking?
Phillippa: If Dad goes diving, what does he have to wear?
Barbara: Or "tell me about Dad's diving'. Keep it open.
Phillippa: Or even "Tell me how he gets it off the rock?" Or "Where does the paua live?"
Barbara: Or "Paua, scallops and pipis, how do you tell the difference?" "How do you know it's a paua or a scallop or a pipi?"
Phillippa: It's quite easy when you look back on it. But it's not easy when you're right there on the spot.

In such reflection on previous dialogues the past is brought into the present and connected to the future through planning specifically for improvement in interactive skills.

Barbara: So what is it that you thought they learned apart from the weed mat at the bottom of the sand pit?

Phillippa: One little guy said to me "I'm going to get a new sand pit and I'm going to teach Dad how to make it" and he hasn't even been in my planning cycle.

Barbara: So it was really empowering him.

Phillippa: It was, yes. And I tried really hard to let them do the talking and to find out what they were really trying to get at. But it's not easy. It's something quite new, isn't it?

Phillippa: In the zone of proximal development, Vygotsky is saying that's when he's got his mental representation but he can't move on unless the adult supports him. What's the difference between co-construction and scaffolding? 'Co' means two, doesn't it?

Barbara: I think the co-construction is what Reggio Emilia is doing; it is very much doing it together.

Phillippa: I've seen that with the children; the one in the sandpit, the children have been doing their own building in the sandpit, rebuilding it themselves without me being there.

Here Phillippa and I grapple with what was for both of us the new language of co-construction and how this might differ from scaffolding children's learning. The discussion moved fluidly between the theory and its application in practice, as we related the ideas to specific interactions with children. These discussions with Phillippa led eventually to my development of a model of intersubjectivity, which became a useful tool for explaining our ideas in another centre setting (Figure 6.1, p. 177). This model is grounded in practice and is the outcome of our co-constructed learning. Because my model of professional development in centres was a successive one, the next centre I worked in was able to benefit from the work we completed in this centre.

A example of learning taking place across activity settings was Phillippa's translation of her degree studies into the programme of professional development, and vice versa. In coming to terms with some possibilities of applying sociocultural theory to her centre programme, Phillippa's contributions to our discussions on the scaffolding of children's learning, led each of us to a new appreciation of the limitations of the scaffolding metaphor when working towards developing intersubjectivity with children.

Phillippa: I think I have changed the way I am working with children. Well, to me that was like scaffolding, but now I am concentrating on asking more in-depth questions and getting them to tell me what they are thinking.

Phillippa was a teacher who was quite prepared to be directive on appropriate occasions and she came to view such teaching, although contingent on the children's responses

and at their level of understanding, still related to a specific outcome that resided largely in her head, as examples of scaffolding the children's learning. The above comment is an indication of her belief that developing intersubjectivity with children requires different skills and processes from those of scaffolding. These skills of co-construction include finding out what the children are thinking, before sharing her own thinking with them, and then being prepared to follow their lead wherever this might take the investigation. The teacher will still have a major role in this direction of inquiry, as the "senior semiotician" (Vygotsky 1926), given that she will have researched the topics of the children's interests and will have an adult's vision of related topics and possibilities for making links between these. The difference between investigating under a scaffolding metaphor and a co-constructive one seemed in the practices at Kauri to be the difference between the teacher having a specific knowledge outcome in mind and having no outcome other than an engagement in inquiry, with the direction of this inquiry being developed jointly between all participants.

External evaluation an influence on teachers' action research

When I arrived at this centre to start our action research, the teachers, management and parents were all very concerned at the impact of their recent Education Review Office (ERO, see Glossary) report. They had all accepted the evaluators into their centre with a great deal of confidence that they "*had it just so up there and to be told we have a long way to go is a real shock*". They were especially "*demoralised and demolished*" to be told that they "*did not meet with accordance*" on programme documentation. As a result, whenever we discussed possible changes in their documentation a major consideration for the teachers was whether such changes would meet the approval of ERO and allow them to reach the coveted "*good report*".

One of my personal goals, after the first meeting with the teachers, was to support them in regaining their confidence in themselves as professional teachers and in reclaiming their own discourses about what constituted appropriate practices and documentation for their community of learners. Teachers need to be proactive in informing ERO of their philosophies and processes (Dahlberg, Moss & Pence, 1999). Their concern for their ERO report was mentioned at each meeting I had with this teaching team and because the topic of their concern was so directly related to our work in developing their

programme, we needed to address the issues raised for their planning and documentation processes with ERO within their programme of professional development. We therefore engaged in considerable debate about how we could interpret the expectations from ERO. Thus the ERO report played a central role in this centre's professional development, even in the absence of ongoing interaction between the two institutions, an example of activity across two settings in the institutional plane.

The influence of artifacts (photos from the past) on learning

During the period of my work at this centre I had installed on my personal computer a programme that allowed me to print photographs of individual frames from my videoed sequences of the teachers' interactions with children. This facility proved to be a very useful addition to documentation of children's activities, and to reflection for teachers and parents. At the time of my work in the case study centres, digital cameras were not available to centres as they are now, in 2003. The use of photographs produced with such short time delays was a groundbreaking process for this centre.

Phillippa: I think the fact of having those coloured photos is just magnificent. When they've got something special to look at it stimulates the language and dialogue, there's no doubt about that. I feel that this technology has given the whole planning a boost. It's been wonderful.

Barbara: So now that I'm not coming in any longer, bringing photos, will the planning carry on?

Phillippa: Oh yes, it will carry on. But I don't think it will be nearly as wonderful. You see, especially for us, if the child doesn't come every day, I just need to get out the photo and that's what been so good, we've got the construction photos and we can talk about that. When they see that, their little minds go right back to where they were, to pick up on the focusing points again, to pick up on that dialogue. I love it and I think the coloured photos are beautiful. I would love to have had these to show ERO, I really would.

Simone: I think the photos for the documentation is just wonderful. They say a picture says a thousand words and it's just there. And it also helps you remember what it's all about and the conversation that went with it, as a reminder. It's a good devise for remembering the scenario of what happened.

The teachers were able to use these photos with the children as a tool to return to topics that interested them and to initiate discussions with their parents. In a centre that had little other individual documentation, the dialogue transcripts and the photos became the

basis of portfolios for these children. The teachers also took their own photos, especially of children's project work, but they found the delay between the recording and the printing of the photo frustrating. My ability to return to Kauri on the same day with prints from the video recording of the children's activities became a key resource tool for these teachers. Such prints supported learning for children and teachers in their personal planes; they supported teacher-child interactions, as they used photos from the video to reflect on and make sense of past, shared experiences; and further, the photos were frequently used to support planning processes documentation for reporting at every level.

Co-construction between centre and home

When parents are involved routinely as members of the community of learners, the consequent sharing of information benefits the children's interactions. In the following example, a parent was able to correct the teachers' misinterpretation of a child's acts. The two teachers, Phillippa and Simone, discussed Frances's playing dead, thinking it was related to "some dog that had died". However, when they showed the photos they were discussing to Frances's father, he was able to correct the origin of her "playing dead":

Phillippa: It was interesting, when I was showing Frances's father these photographs, he looked at her lying down and said "Oh she's playing Snow White; she watches the Snow White video all the time. Snow White ate the apple, dropped dead, the Prince has to kiss her and she wakes up and everything is just fine.

This information from Frances's father provided the teachers with a whole new perspective of the children's play, from which they could contribute to the children's understandings of each other's ideas. Co-constructing learning requires each party to listen to and hear the other's viewpoints; however, children are not always able to tell their adults what they mean. In the above example, Frances's father was able to contribute to the teachers' understandings of his daughter's play, in a way he would have been unlikely to do without the photos of the play as a prompt.

In the following excerpt, Phillippa provides evidence of the parents being a real part of this centre's "community of learners", and of distributed cognition:

Phillippa: The whole thing was really nothing about the snails, but because they happened to be there in the sandpit, we had been looking at the spirals on the snail shells the day before and this just came up. It's amazing their little memories, they see something and things will just come up and someone else will know what we are talking about. 1 often have parents come in and say "Oh D. is going on about this and that and can you tell me what they are on about".

The parents are sometimes quite influential in the actual project work that 'takes off' with the children, because of their own interest in the same topic:

Phillippa: It was the sandpit. Well, it was when they dug to the bottom of the sandpit. And they wanted to know what was at the bottom and we dug a new sandpit alongside, got out the photos of the sandpit when it was being built here, built the sandpit and explained the weed matting and everything. But it hasn't taken off like the wedding thing has because more of the parents are interested in the weddings, especially mothers, so that has been quite an exciting one.

These teachers frequently expressed their appreciation of the parents' input and the lengths they would go to protect this input:

Simone: I really do want to go ahead with this idea, because the parents are such a marvelous resource. I have brought in my daughter's gown and talked about my experiences as a flower girl and shown the photos. And they go giggly silly about the bride and groom kissing and that's all part of it.

Collaborative planning relates ideas from several sources to children's learning

When two or more professionals discuss extending learning with children, possibilities become obvious that a single professional would not have considered:

Barbara: So these are still the three you are planning for in the planning cycle? Have you done a brainstorm of where you might go with it?

Simone: Yes, in a way I have, but it could be extended further...I'd like to maybe go into families, what different families we have because we have quite a lot of different sorts of families here. "Who have you got in your family?" and who they consider to be a part of their family.

Barbara: That's where you might get into talking about what happens when things go wrong in families, like having single parents. Do you have some single parents here? What happens when you visit the other

parent and has the other parent got another family as well? Or is single parenthood their choice – it may not be something gone wrong at all! That's the reality of life.

Here my response had been stimulated by a recent reading of MacNaughton's (1996) advocacy for early childhood teachers to challenge social norms at every opportunity. We give meaning to our lives through our everyday interactions with each other. If our interactions constantly reinforce the dominant discourses, children will learn no other ways of considering the world than by what they know from their own experiences. The teachers in the above example responded well to my suggestions that we need to be aware that other discourses exist as well as our most familiar ones. In fact, they corrected my assumption at one stage that one of the girls in their programme who was to be a flower girl at her mother's wedding would be dressed in a pretty frock; the wedding was to be at the source of a river in the mountains, with suitable attire for this venue. When two girls were "getting married" and similarly, two boys, the teachers used these as opportunities to discuss same-gender partnerships and parenting.

Learning occurs across institutional boundaries

All of the items in this section have discussed aspects of co-construction of children's understandings across institutions. The following dialogue is an especially good example of the way in which understandings can develop within the community of early childhood, in New Zealand. This dialogue became the subject of considerable analysis over a period of time through my including it both in a conference presentation and then in a published journal article (Jordan, 1999a,b). This is an example of the co-construction of understandings across the boundaries of institutions and practices, involving my university, Kauri Kindergarten and the refereed publishing networks and processes, including the pre-publishing peer reviewer.

Outside in the sand pit; Child 1: 5.5 years old

Adult: Head Teacher

1. Child 1: *Look, I've found a shell.*
2. *Adult: Hmm...*
3. *Child 1: It's like a snail's shell* [pause, holding shell in hand; turns it; feels its shape, inside and outside the shell*]*.
4. *Child 2: No it's not a snail shell. [pause] It's a beach shell.*

5. *Child 1: Look this one's a scallop shell. You can eat a scallop for tea. Now look at this one, it's a pipi. My Dad dives for shells. [pause] It's like a snail shell.*
6. *Child 2: No it's not a snail shell.*
7. *Adult: Is the shell hard or soft?*
8. *Child 1: It's hard...real hard. [pause] I can break shells.*
9. *Adult: How do you break them, M?*
10. *Child 1: Stamping on them.*
11. *Adult: Stamping on them?*
12. *Child 1: Yes, the snails.*
13. *Adult: Could you stamp on that shell (the scallop) and break it?*
14. *Child 1: Nup...too hard.*
15. *Adult: Why is that shell hard, do you think?*
16. *Child 1: Ummm ...if you drop it, it could break.*
17. *Child 2: It's really hard. It's in water.*

My initial analysis of the dialogue as presented at a conference and in the journal article follows:

> This dialogue provides evidence of some of the many ways in which this centre team was scaffolding the children's learning, in the interpersonal plane of activities. The children and the teacher are all contributing their ideas to this dialogue and the direction of the discussion is an outcome of all contributions; it is specifically not dictated by the teacher and she did not have a particular learning outcome in mind at the outset. The teacher supported the children in their thinking through responding to their contributions. A snail shell is soft and scallop hard, therefore tuning the children into thinking of the condition of the shell was a way of helping them to identify the sort of shell it was. Providing even more complex input, the teacher talked about the need for shellfish in the sea to have hard shells in order to survive, in comparison to the snail shell that could be soft because they live on land. That the child "internalised" this understanding is obvious in the later application of this idea to the experiment with the shell with the force of the hose water "The shell didn't break. It's safe."
>
> The teachers frequently revisited previous dialogues with the children, who could address the same topics of their previous interests and perhaps with further experiences meanwhile from which to contribute to their thinking. Both teachers and the parents contributed to discussions of the children's interests, at home and at the centre. Planning was based on knowing the

children and their families well and supporting communication between them. Children were engaged in topics in which they were interested. The children's understandings of the topic and related topics are being developed, just above their current level of functioning, with the task being neither too simple nor too difficult. Children were involved in social situations in small groups, as they together explored the topics, each from their own perspectives and supported by the adults. Jordan (1999b, p.5).

A pre-publication reviewer of the article read line 7 above as a typical teacher question that bore no relationship to the rich knowledge on which the children were drawing. S/he saw the teacher as ignoring the children's contributions and knowledge and directing their attention to the hardness/softness of the shell! This reviewer said s/he did not think the described interactions fitted her understanding of a good example of scaffolding or intersubjectivity (as described by Dockett & Fleer, 1999), nor that they were examples of meaningful interaction, creative activities that allowed the children to synthesise knowledge.[1]

In fulfilling my intentions to be transparent in my work in the centres and also as a tool in revisiting with the teachers our previous analysis of their dialogues, I chose to discuss these comments with the Head Teacher of Kauri Kindergarten. First, I acknowledged that the reviewer's problem in accepting the given example as one of scaffolding (Berk & Winsler, 1995) could as well be to do with the limitations of my reporting as with the original interactions.

Barbara: *Was there any particular reason that you asked whether it was hard or soft?*
Phillippa: *Yes! Remember they were walking around in the sand and they had bare feet and he started to stamp on them.*
Barbara: *Had you talked about hardness or softness previously? Or were you just thinking, "How can 1 extend their thinking?*
Phillippa: *Because what happened was that they were walking around on their bare feet and they found shells and they were walking on them as well and what 1 was trying to do was get the comparison between the shell being, like, a snail shell soft and the sea shell is hard*

[1] I have considered the ethics of reporting what are normally confidential comments by an anonymous peer reviewer. Here, I have included a few of them as tools in reporting the co-constructing of understandings that occurred as the direct result of them, for teachers at Kauri Centre and me. We frequently wanted to thank the reviewer for joining our co-constructing community.

[because] first of all they had dug up shells and that was like treasure and then they made like a little beach and they had all the shells, like, on the shore line and that was when they were trying to break it If you had the camera going the whole time and getting dialogue, wouldn't it be brilliant?
It was relevant, you see because Mat was trying to break one in the sandpit with his foot and an ordinary one, a snail one, he could have, but this one he couldn't. He was trying to stand on the hard shell and it wouldn't break.

Barbara: *So you were looking at the snail shell being soft, oh OK.*

Phillippa: *Yeh, Yeh. It was the snail shell. Because what happens is, when we go for a walk a lot of the children will break the snail shells straight away. A few days ago we had had snail races with the coloured dye – it was brilliant. The kids and the parents love it too. 1 had never done that till 1 learned from you how.*

Perhaps the teacher could still be said to have her own agenda of "hard/softness". However, in the context of the children's ongoing interest in many aspects of both the sea and in gardening (growing sunflowers was concurrent with the "sand and water play" project) over a period of several weeks, this teacher could also be seen to be helping children to relate their own interests across time and space, in many activity settings. Line 17 above indicates this child was making the links the teacher was reinforcing, about shells of animals in water needing to be hard, compared with those on land. While she is following and supporting the children's own learning, this teacher is not reticent in contributing from her own research on the topic to the current dialogue. The teacher herself expressed the difficulty I found in conveying the bigger picture of the children's and her interest in shell hardness.

Barbara: *I haven't been able to give enough of the rich description behind this incident.*

Phillippa: *I guess the other thing is that this is one of the things about using that little tape. If you use it you get what you get. If you're not there, you're not doing the observation of the whole project in the whole of the setting; then you're just getting the language. What she [the reviewer] is saying is quite right, that's how it reads.*

Before the article reviewer's expressed concerns that the teacher was following her own agenda rather than tuning into the child's ideas, the teachers had brainstormed their knowledge of the children's interests in their fathers' diving exploits. The teachers discussed diving and collecting seafoods with this child and with others on several other occasions. Could it be that, in tuning into the "hardness/softness" of the recorded

dialogue in this instance, the teacher only temporarily appeared to ignore the child's comment about his Dad diving for pipis, because she had good reason to believe that the group of children were at least as interested in the state of the shells? I believe that this was the case. At any point in a dialogue between adults and children there exists a multitude of possible directions to follow; to some extent the choice will always be a subjective one, based on the adult's ability to synthesise her knowledge of the children and of the activities in which they have been previously engaged.

This episode was a reminder to me that developing intersubjectivity with children in order to co-construct learning with them, of necessity takes place across time and space, often in small chunks. The examination of one small piece of this learning puzzle can therefore be quite misleading. In what appeared to be spontaneous, one-off and sometimes quite didactic exchanges, the teachers were in fact frequently continuing previous conversations with children in the light of current linking ideas. Meanwhile, reflections such as those on the reviewer's comments supported these teachers as they worked to develop their skills of inquiring into the children's thinking about their thinking, where it came from and how they could pose questions for further investigating.

In the many exchanges between the teachers and me about the unknown reviewer's communication, interactions occurred across and between all three planes: institutional (between the centre, my university and the institution from which the reviewer came); interpersonal, between adults and between adults and children; and personal, as each of us learned from these interactions.

6.2.3 Outcomes for children of teachers' professional development

Outcomes in sociocultural terminology are expressed as transformation of participation, as children engage in authentic learning experiences (see 7.4.4). During their work on projects about water and about weddings, the children at Kauri were:

1 involved in planning for their own learning, as the teachers discussed with them the format, reasons for and how they might be involved in a mock wedding

2 empowered to make decisions and to conduct their own experiments; they took their own "photos", made drinks

3 engaged in higher order thinking, as they identified different ecological environments and the needs of animals in each environment

4 involved in collaborative inquiry with their peers, using a wide variety of media such as books, specially provided equipment ,and artistic representation of ideas

5 engaged in authentic learning experiences, through ongoing projects; the children fully engaged in the water project and had numerous anecdotes to share related to their lives outside the centre

6 valued, through better links between their centre and home and better communication with both teachers and parents about topics of their interests. Both teachers talked with the children and with their parents about the water and diving project and photos, and artifacts contributed to the children's participation on a daily basis.

The two teachers at Kauri and I co-constructed learning about co-constructing learning in significant directions. We identified many different situations involving a variety of people and groups, in which children's learning can take place across time and space. I realised that some excellent co-construction of learning in the centre could take place even without the added advantage of a comprehensive system of maintaining individual children's profiles, so long as the project board is a "living documentation" of the children's ongoing investigations. I continue to doubt that this system would be sufficient in a larger centre, where the teachers would not be able to know the children and their families so intimately, and where it would be all too easy for some children to miss out on individual attention. Transparency in thinking and dialoguing was reinforced for me as an excellent tool in action research. Through taking my thinking and concerns about several aspects of their work back to these teachers, we were able to make considerable progress in our thinking, because we were dealing with issues that were real for all of us. I valued the excellent teamwork and trust the three of us were able to develop. This was especially significant for the less qualified member of the team who had initially had some strong reservations about contributing to our programme of professional development. And finally, together we became dissatisfied with scaffolding as a guiding model for the ways in which we thought it appropriate to interact at maximum potential for the support of children's thinking in early childhood,

and we began to develop our understanding of what co-construction might mean in this context.

These teachers approved of my delivery of a conference paper, the major focus of which was my work in their centre (Jordan, 1999a). By the conclusion of my work with them, they seemed to be much more confident that they were planning more appropriately and that they would be able to express this to ERO when they next had the opportunity, though more work still needed to be done in this area. They had Encarta (see Glossary) installed on their office computer and were using this regularly for their research with children in their topics of interest, and they had become practised in recording their own dialogues with children and using the transcripts of these in their planning to extend the children's thinking. Both teachers expressed their changed beliefs about children's ability to think, and both felt they were working quite differently with the children at the conclusion of our action research, especially in listening to them and in extending their understandings as projects.

6.2.4 Kauri Summary

At Kauri centre, the extensive community of learners had a significant impact on the outcomes for the children in the programme. Because these were such actively reflective teachers, learning from any available source was considered to be valuable. Smyth's "four moments of reflection" (Smyth, 1991) were incorporated into the teachers' consideration at every opportunity. Asking themselves *"what does this mean; where did it come from; how can/should we change; and what has changed or can we change for the children?"* was useful to their ongoing co-construction of their professional development.

The teachers at Kauri were left with many new skills and ideas to continue to develop. We all felt we were contributing to what we hoped was a paradigm shift in the early childhood sector. For my part, I learned from the Kauri teachers a greater appreciation of some differences between scaffolding and co-constructive techniques in working with young children. Although still unsure whether to focus on these differences or to minimise them in my future work in centres, I now had a fairly sound, practical understanding of what the differences might be. I entered the next programme of

professional development at a very different centre eager to continue to trial my ideas as they might be appropriate to the community of learners in this new group.

6.3 CASE STUDY THREE: TERRACE CENTRE: FROM INQUISITION TO CO-CONSTRUCTION

6.3.1 Introducing Terrace Centre

Terrace was a large and long-established community childcare centre, with separate sections for under- and over-2-year-olds, each with their own indoor and outdoor areas. At the time of my work with them, a full time supervisor was employed, with an administrative assistant. The over-twos section maintained a ratio of 1:10, resulting in approximately 4-5 teachers working with up to 40 children at any time; this was a large group for both children and teachers to work in. The number of casual staff employed here during the period of the research meant that some 15 to 20 teachers worked with the children during a week. This was a very mobile staff team, with frequent staff changes, though with a stable core of three senior teachers averaging 5-6 years service in this centre. The team had been involved in several programmes of professional development in recent years. (For further centre details see appendix D4.)

The focus for Terrace Centre in this report is my change in terminology, from that of adults scaffolding children's learning, to the co-construction of understandings. I demonstrate this change through the analysis and comparison of two dialogues the key teacher in our action research programme had with children. While scaffolding and co-construction are not mutually exclusive terms, metaphors do have an influence on intuitive understandings (Lakoff & Johnson, 1980).

There was evidence in my work with this centre that clarification of the scaffolding/co-construction metaphors was necessary to support teachers having access to the full repertoire of interactions with children. Certainly clarification of some differences between scaffolding and co-constructive interactions between teachers and children in early childhood practices supported my own evolving understanding of the constituent skills and processes in each.

I had been involved the previous year with facilitating this centre's programme of professional development related to programme planning based on *Te Whāriki*. I was therefore very familiar with their planning processes; specifically, I was aware they planned group activities based on observations of individual (focus) children, in a two-week cycle, though this sequence varied considerably across the groups. The teachers who initially chose to engage with this further programme of professional development were keen to extend their skills of dialogue with children, to identify the children's thinking and to plan programmes of activities that could develop into projects with the children, based on these observations. Because of our shared understanding at the start of the action research and also because of my previous experiences in Manuka Kindergarten, we were able very quickly to establish the specific aspects of their programming to address. Three teachers working with the two- to five-year-olds initially chose to join my programme of professional development; for various reasons, Marion was the only teacher able to continue working with me.

6.3.2 Dialogue analysis as a tool in professional development

Marion analysed several of her own dialogues with the children that I had video-recorded and transcribed. Having established the value of analysing her own dialogues with children, Marion asked me to video-record her session of muffin-making with what became quite a large group (12) of children, the day following their trip to the local supermarket to visit the bakery and buy extra ingredients for the baking exercise. In a centre in which neither process-cooking (see Glossary) nor group cooking were regular events, so many children chose to join the activity that interactions between Marion and the children were probably more directive than would have been possible in the more relaxed atmosphere of a smaller group. Analysis of the following dialogue led to the development of a model of intersubjectivity (Figure 6.1, p.177).

Marion (teacher) and 10–12 children, making muffins, in one bowl circulating the group:

Marion: *This is bran. Where do you think bran might come from, Rachel? Have a look at it.*
Rachel: *You have it on porridge.*

Marion: *Yeah, you can have it on porridge. Where do you think it might come from?*
Child: *Hey, this is a mill? Seed.*
Marion: *Everybody have a wee look and see where it might come from. Does it look floury?*
Child: *Yeh. I think it comes from flour.*
Marion: *Ah, now you're getting onto it. And where does flour come from?*
Child: *Umm, the beehive?*
Marion: *A beehive?*
Child: *The bee gets on the flowers and then the bee collects it.*
Marion: *Remember the story of the Little Red Hen?*
Rachel: *Oh, from the seed.*
Marion: *From the seed, from the wheat, that's right. They grind it and grind it and grind it. OK, we need some bran in our muffins today. Now let's read what else we need. Some baking soda. What do we use baking soda for when we make something?*
Marion: *The eggs are from our chickens. So they are very special.*
Child: *What's inside them?*
Marion: *What do you think might be inside them? Have you seen an egg inside?*
Child: *I have and it's a rusty bit in there.*
Marion: *A rusty bit. There's a clear bit, a white bit.,*
Child: *And an orange bit.*
Marion: *That's right, an orange bit. A yolk. I'm going to let you guys have a crack at these today.*

In the above example, Marion directed the conversation, she did most of the thinking and the children were working hard to guess what was in her head. Marion did not respond to such original statements about the egg as "it's a rusty bit in there", or to ideas such as "the bee gets on the flowers and then the bee collects it", rather she was leading the children to produce the answer she was looking for, following her own agenda, on each occasion. Here are prime examples of "guess what's in the teacher's head" described by Dahlberg, Moss and Pence (1999, pp.53-54). However, this group of teacher and children had warm and reciprocal relationships; they knew each other well and had shared many experiences, including the previous day's trip to the supermarket to buy the ingredients for the cooking, episodes of reading "The Little Red Hen" and of caring for the centre's own hens, which had laid the eggs being used in this cooking. The teacher consistently talked about previously shared experiences with the children, eliciting responses from them that supported their linking of ideas across settings and experiences. An example of extending children's interests was the evolution of children's writing "thank you for our visit" letters to the manager of the bakery, into a postal project (see also pp.235-236).

Several factors mitigated against this teacher developing shared meaning at the deeper level. The size of the group was too large for one teacher to interact effectively with each child's ideas. For this teacher at this stage of her professional development, "getting inside the child's head" seemed to add to her focus on supporting their factual knowledge base and this was at the expense of developing their own ideas and understanding of the actions taking place between them. Time was also a factor, in that the activity needed to be completed in time for the children to eat their muffins before the next set of activities was due to begin.

The video-recording of the muffin-making exercise was transcribed and analysed with Marion. I made a book of laminated photos, taken from my video of their session, with simple captions to be shared with the children (another example of the co-construction of learning using tools and artifacts). Marion commented, "The activity would have been great if I had only had six children to work with. But they all wanted to join in and at Terrace Centre we have a policy of not excluding any child who wants to join in. I couldn't do it".

Even in this less than perfect environment, the teacher and children were working to develop shared meanings, though the topics of these shared meanings were firmly within the control of the teacher. At this point I struggled to identify how I could discuss various degrees, or levels, or depths of scaffolding learning for children. During the full staff meeting, the group seemed to understand the concepts of scaffolding learning and I could not deny that, along with Marion, they did meet many of the criteria we had previously identified as contributing to this. The other teachers defended Marion's scaffolding skills, as demonstrated in the muffin-making video; they seemed to resent my implication that Marion could improve her interactions with the children, pointing out the many ways in which Marion was scaffolding learning for children. Involved as they were on the periphery of our action research the remainder of Marion's team engaged in the reification (Wenger, 1998) of Marion's and therefore their own practices (see p. 26 this report). Yet the outcome of interactions seemed to be qualitatively less empowering of children than I had come to know was possible. When the teacher was in control of the direction of thinking and followed this direction, both the teacher and the children seemed to be missing out on ideas that might have eventuated had they followed through with the children's own creative ideas.

In my struggle to represent the various situations of interaction possible when a teacher is working closely to support children's thinking, I developed a draft of the model of intersubjectivity (Figure 6.1, p. 177).

6.3.3 A model of intersubjectivity that makes sense for practitioners

The co-construction of learning is a complex concept; it is also one that many practitioners would claim to be implementing in their programmes, regardless of their understanding of the concept or of their teaching methods. In fact, it is likely that some degree of intersubjectivity that is the core of co-construction will exist in even the most didactic of teaching situations, as teachers adjust their levels of explanation to the level of children's understandings. The construct of co-construction depends on levels and amounts of shared understanding developed, and this depends on the distance between participants and on the sharing of power between them. The following model of intersubjectivity (Figure 6.1, p. 177) is my attempt to represent graphically the qualitative difference between the minimal levels of shared understanding developed during either didactic (cultural transmission) teaching, or unassisted, child-directed play, and the much greater levels that develop when all parties are contributing to interactions through the sharing of power. The key features in this diagram are: the sizes of the areas of intersubjectivity developed, representing the levels of mutual understanding; and the distances from each participant to this area of understanding, representing the psychological distances between participants and the levels of power sharing. The perforated lines indicate that these are not solid boundaries and that they are open to input and influence from many sources.

Figure 6.1(a). Adult and child as equal partners in interactions.

When ongoing intersubjectivity is practised, both contributors are considered to be experts in the topics of discussion. The child's understandings are as valid as the adult's and on occasion the child will be acknowledged as more of an expert than the adult. Each participant listens to the other's ideas, contributes from their own and together they develop their unique "shared meaning". The child's voice is heard and valued. Both participants make links between experiences, across time and distance and there is

evidence of learning as "transformation of participation". Figure 6.1(a) depicts the co-construction of understandings between adults and children.

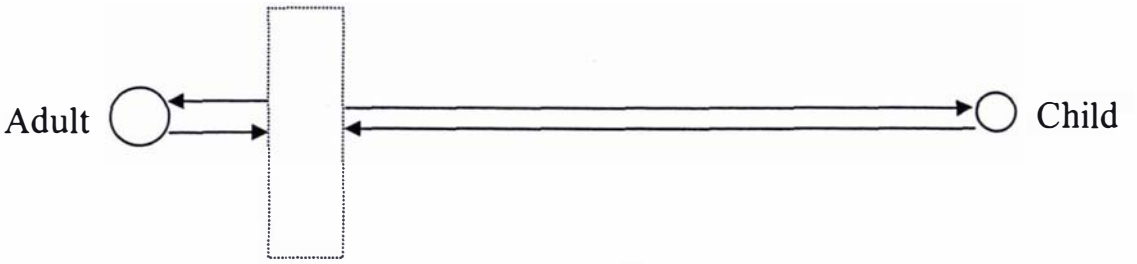
Figure 6.1(b). Adult-directed interactions; scaffolding children's learning.

The adult is in control of the activity and leads the discussions. While the topic of discussion and the planned activities may have arisen from the adult's observations of the child's interests, the child actually has little control and her/his thinking is only heard in the context of the adult's interest in extending it to meet the pre-set achievement objective. The adult is likely to be doing most of the organisation, with the child working hard to understand what is in the teacher's head and contributing wherever possible. There will be some links made between experiences, but the area of shared learning is less than it could be. Figure 6.1(b) depicts adult scaffolding of children's learning, in the original, narrow sense of the term.

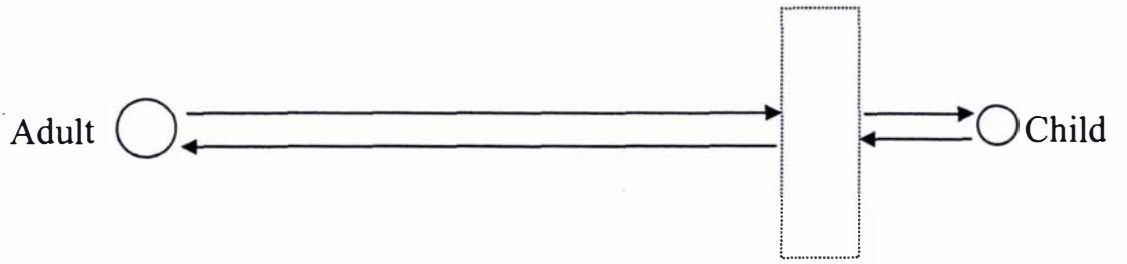
Figure 6.1(c). Child-directed interactions.

The child is in control of the activity and leads the discussions. In this situation the adult is observing the child and supporting her/his activity and discussion with minimal input. The child's ideas are being heard by the adult, but the child is not being provided the opportunity of hearing what the adult thinks about this topic. The area of shared learning is again less than it could be.

6.1(a). Adult and child equal partners in interactions.



6.1(b). Adult-directed interactions.



6.1(c). Child-directed interactions.

Figure 6.1: A model of intersubjectivity that makes sense to practitioners

There are times in a busy early childhood centre when each of these three modes of interacting with children is valid. However, when teachers intend to develop shared meaning with children, it is important they value the child's voice and listen to the child's ideas. As the more experienced partner in the learning process, the "senior semiotician", the adult will often be able to suggest ideas and to implement activities that the child alone would have been unable to consider, even when the child knows more about the subject under discussion than the adult does. Having exercised such leadership, the adult does not need to maintain it; it is important to relinquish power to the children, so that the planned activity becomes something different as the children imbue it with their knowledge and energies.

Collaborative methods are especially conducive of learning when the desired outcome is conceptual change and the understanding of principles; on the other hand, more directed teacher input is perhaps more appropriate when it is lower order skills and concepts that children need to acquire. Thus it is quite appropriate for a teacher to demonstrate, or even hold a child's hand to guide their fingers, in such activities as learning to cut with scissors, to level a teaspoon off in measuring for cooking, or to count by rote. It is not appropriate to attempt to teach children to read, write or understand the concepts of mathematics using such direct instructional methods as the *modus operandi.*

I shared an early draft of Figure 6.1 with Marion during her morning tea one morning, immediately before her planned map-making exercise with her extension group of four-year-olds. Marion's immediate response to discussion of the model was to separate the group of 12 four-year-olds into two groups. While the other six children worked with another teacher to locate their homes on a map of their city, as had been planned for the whole group, Marion suggested to her six children that they draw a plan of the route from the centre to their home.

Marion: *Here is Terrace Centre. On your paper you need to draw a map of how I get to your place. Your Mum keeps telling me to come to your place to have a cup of tea and I want to know how to get there. Think about what you pass on the way home and which way I will have to turn round corners.*

The children drew their maps independently and Marion circulated among them to talk with them about their drawings both individually and with encouragement to share ideas with each other.

Rachel:	*This is the dairy.*
Marion:	*This is the dairy, so I go along the road here and straight along here and is this another corner? Do I go around the corner here? Do I turn my car round there? What's this?*
Rachel:	*My house.*
Marion:	*Oh, that's your house. OK, so I go round the corner. Is this another corner here? Yes. Where abouts is your post box? Is it on the side of the road or is it...?*
Rachel:	*Here.*
Marion:	*Oh, it's way up there. So Rachel's post box is way on the other side of her house.*
Boy:	*You should have put your car park over there.*
Rachel:	*That's not even on the right road.*
Marion:	*I live at Farthing. Does anyone know how to get to Farthing?*
Rachel:	*No, because you haven't drawn a map!!*
Marion:	*Oh, OK. Have you been for a ride in the car with Mum and Dad out to Farthing, anybody?*
Chorus:	*I have.*
Marion:	*Oh yes, you and Jonah have been to the Farthing Show haven't you? Can you remember what you passed on the way?*
Boy:	*We saw a plane with ??*
Boy:	*And it was all rippling with smoke coming out.*
Marion:	*So did you pass the airport?*
Boy:	*And we saw the helicopter in the sky and it went up and down, up and down, up and down, up and down.*
Marion:	*What made it do that?*
Boy:	*It just had to go up and down and it didn't crash. It just landed with its strike things on.*
Marion:	*Did you stay and watch it?*
Boy:	*When we went on the merry-go-round we saw it go up and down.*
Boy:	*We were in the front because we were in the boat. And I was the driver because there were two seats.*
Marion:	*Oh, you were the driver because there were two seats.*

During the dialogue with Marion the children's fingers and hands were busy describing the route to their home, beyond the words that were recorded. Marion developed shared meaning with each child through asking them to interpret what they had drawn and again through being able to draw on her personal knowledge of the children's experiences and where they lived. The children interacted with each other verbally when discussing their drawings and when influencing their peers' products. In this episode, the children were the experts in their knowledge of the route from the centre to

their homes and in interpreting their drawings, and Marion constantly reinforced this in her interactions with the children.

Marion changed her style of interacting with the children from one of inquisition, as demonstrated in her muffin-making episode, to one of developing shared meaning. Even though she had instigated the topic of construction, the children engaged fully with her in co-constructing understandings and ideas. Together, Marion and I identified that the skills of scaffolding children's learning and of co-constructing learning with them are not mutually exclusive. However, although there are skills common to both processes, there also seem to be major differences between them. In scaffolding learning, as depicted in Figure 6.1(b) (p. 177) the purpose of developing intersubjectivity appears to be for the teacher to know what the child understands about the teacher-chosen topic, so the teacher can organise the requisite support for the child as s/he learns more about the topic. The planned outcome of this learning is that the child understands what the teacher knew before the beginning of the exercise. In the above example (p.172-173), Marion wanted the children to understand where flour came from and what was inside an egg and she scaffolded children's talk to attempt to achieve these outcomes. The skills of co-construction, on the other hand, are more relevant when the topic of discussion is open-ended and the teacher and children are together establishing and extending their understandings of it. In such discussions it is frequently the children who hold the more relevant knowledge and the teacher works as a facilitator to support their extending and representing of this knowledge. In the above example (p.179), it was the children who knew how to get to their homes and the features that were important to them on \the way, and Marion supported them (co-constructed with them) as they represented this understanding as a map.

6.3.4 Outcomes for children of teachers' professional development

During their cooking project that evolved into a postal project, the children at Terrace were:

1. involved in planning for their own learning; with Marion, the group of children planned how they might help her find their homes and at many points in the evolving postal project the children planned ahead how and what they would send to themselves and later how they might distribute the junk mail around the centre

2. engaged in higher order thinking, as they represented their thinking about the route from the centre to their own home
3. involved in collaborative inquiry with their peers, as they discussed each others' representations
4. engaged in authentic learning experiences, through ongoing projects; the children fully engaged in the cooking and the evolving postal projects and had numerous anecdotes to share related to their lives outside of the centre
5. valued, through better links between their centre and home, and through warm, reciprocal relationships.

6.3.5 Summary Terrace Centre

For me the learning at Terrace was probably as significant as any I engaged in during my whole project, since it was during my work here that my model of intersubjectivity gelled. Other groups with whom I have worked as a professional development facilitator (Jordan, 1999a,b; Jordan & Giotta, 2001) have found this model a useful one in support of the extension of their understanding of their interaction and co-constructive skills.

For the remainder of this report the research propositions include the term "co-construction" in favour of "scaffolding" in relation to teacher-child interactions. To restate the propositions with this revised terminology:

Proposition one:

Teachers and children co-constructing learning require the use of many interaction skills.

Proposition two:

Co-constructing learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Proposition three (unchanged):

> Facilitator-teacher co-construction of research is effective professional development; with such critical reflection, a change in philosophy can either lead or follow a change in interactions with children.

6.4 CASE STUDY FOUR: HAVEN CHILDCARE CENTRE. FROGS AND FOG, CONCRETE AND WINE

6.4.1 Introducing Haven Centre

Brief data of Haven's programme of professional development are in Appendix D2.

The focus of my reporting of Haven Centre is their development of a "community of learners" (John-Steiner & Mahn, 1996; Palinscar, Brown & Campione, 1993; Rogoff, 1998; Salomon & Perkins, 1998) and the outcomes for children in such a programme. Another key concept in sociocultural theory, the community of learners developed for Haven Centre was the outcome of the owner-manager's philosophy of empowerment and collaboration with children, teachers, parents and the community in which the centre is situated. Examples of Haven teachers collaborating with children and with parents are reported under proposition one.

Haven Centre was a relatively new (operating in its second year) private childcare centre in a semi-rural township, licensed to cater for up to twenty-five, two- to five-year-old children at any one time. Their recent Education Review Office (ERO) check resulted in a very positive report of a "high quality centre" (Centre ERO report, 1999). The children experienced a stable staff team of fully qualified teachers, and close relationships were fostered between the staff and the parents/whānau of the children.

In their initial request for professional development support, Haven met my research requirements in that they wanted to develop their skills in supporting children's thinking. The professional development work in this centre was conducted largely by another facilitator within the university's then current professional development contract with the Ministry of Education. In this study, the facilitator of their professional development also became a member of their community of learners and my role in this

community was a more vicarious one. On two occasions, the introductory and the final sessions, the facilitator and I shared their professional development discussion sessions, and on three other occasions I visited the centre during their sessions with the children. The facilitator communicated with me before and after each session she spent with the teachers and shared her meticulous records of their professional development plans (see Appendix D1) with me. The teachers also maintained contact with me and continued to supply me with copies of all their own observations and records of their focus children. As with the other case study centres, I conducted interviews with the parents of the case study children during the week of the implementation of the plans to extend their thinking.

6.4.2 Results from Haven as propositions

Although this report is presented as the final case study for my study, the programme of professional development in the centre actually proceeded at about the same time as my work with Terrace Centre and it was completed before Terrace's was. An implication of this timing was that I was unable to share the model (Figure 6.1, p. 177) that had crystallised for us at Terrace, with Haven teachers, until the end of their professional development. Haven teachers therefore provided positive feedback about the models, but no research evidence on the efficacy of them as support in the co-construction of their learning with children.

Haven Centre demonstrated a functional community of learners that contributed to their co-construction of understandings with children. The teachers' stated vision for the year included planning for their involvement in the community in their centre, and comprehensive processes for collaboration with the parents of the children attending the centre. Understanding developed by the teachers' conference attendance was incorporated into their planning for children's learning, and they also identified their learning from and with the facilitator and researcher in this programme of action research. These teachers collaborated closely with each other and the children, and they encouraged the children to learn from each other. Haven teachers' skills relevant to the scaffolding and co-construction of learning with children are addressed in the following sections, using the three propositions. Also identified are outcomes for children in terms of their transformation of participation, as results of their teachers' engagement in the

processes of hearing the child's voice, during the time of (though not necessarily because of) their programme of action research.

Proposition One: Teachers and children co-constructing learning requires the use of many interaction skills.

Fundamental to developing intersubjectivity and co-constructing learning with children is the development of trusting, reciprocal relationships. The two teachers at Haven, Joy (Supervisor) and Sharon, were adept at listening and responding to children, sharing their power with them and their parents, and providing positive encouragement in all their attempts and achievements. Evidence for such power sharing does not reside in a transcription of our dialogue; rather, these attitudes are obvious in the following demonstrated examples of interactions that facilitated the co-construction of understandings between teachers and children at Haven.

- Verbalising children's activities in support of their learning (reciprocal responding)
- Checking children's meanings; co-constructing meaning
- Talking with children about their thinking and exploring ideas
- Making links between many sources of ideas; knowing children really well
- Relating ideas across activity settings
- Noticing children's cognitive achievements and voicing these
- Respectfully checking that a child would like the offered assistance
- Entering the child's fantasy play
- Supporting children's problem-solving and experimentation
- Teachers sharing their own ideas with children to extend their current thinking
- Returning to children's topics of interest with them.

Verbalising children's activities in support of their learning (reciprocal responding)

The teachers at Haven talked constantly, with children about their actions and their thinking, as well as to each other about what they were observing the children doing.

Sharon: You're making an interesting sound, Cyril.

Cyril is watching other children under the tree; loud sound of rattlers in the background (the two teachers are Joy and Sharon).

Cyril: *You can put the pieces on the grass.*
Sharon: *That's an interesting idea, Cyril.*
Sharon: *(aside) Cyril has some 25 blocks stacked in 3 piles side by side.*
Sharon: *That's lovely helping, thank you Jason.*
Joy: *What's happening here?*
Sharon: *Some very interesting construction.*
Joy: *That is very interesting construction. That's very good balancing.*

The teachers observed specific cognitive skills in children, discussed these amongst themselves and provided this feedback to the children when appropriate.

Joy: *Oops, can we shift the piles to where it's not quite so wobbly? It really is too wobbly, isn't it? Look, we'll get a pile over here for you (another child), darling. He got that pile for himself; you can work over here.*

Such ongoing positive reinforcement and verbalisation of children's actions demonstrate to children that their teachers value their voices and their ideas; it was also the primary method of supporting pro-social behaviour in this centre. At times, however, the children were not interested in such intense adult input and simply ignored attempts to engage with them, carrying on with their own agenda:

Cyril: places pieces onto tray
Brierly: places pieces onto tray. *Chocolate, guys, eh?* Tastes dough. Moves around C. each time to put piece onto tray. *That's a really little one, eh?*
Sharon: *You're working hard there aren't you Brierly? Can you tell me what you're doing?*
Brierly: *Chocolate.*
Cyril: *Chocolate.*
Sharon: *Are you going to cook the chocolate or leave it as it is? You're putting them in the box. I think you'd better put them on the table? Is there a reason for putting them in the box?*
Brierly: *We're going to cook them.*
B carries box to oven
Cyril: *It's cooked.*
Sharon: *How do you know when they're cooked, C.?*
Cyril: *Need a tray here.*
C and B bending down to put dough onto tray.
Brierly: *Our cookies are made.*
Sharon: *Are they chocolate cookies?*
No response.

Checking children's meanings; co-constructing meaning

Joy: *That's interesting Cyril. Why did you move around to this side?*
Cyril: *Because* (pointing to obstacle on other side and saying ...??
Joy: *OK, so it is too small on that side and you can't fit it all on, so you moved around to this side. That's very good thinking. Well done.*

In her role as senior semiotician, Joy verbalised children's actions in ways they would not yet be able to. Meanings were shared, albeit at different levels for the adult and the child, as the child practised involvement in their adults' community, without necessarily understanding as the adult might. The teachers were also comfortable with silences, allowing the children time to think and to respond when they were ready to do so.

Talking with children about their thinking and exploring ideas

The teachers talking with children specifically about their thinking provide further evidence for the children that teachers value their voices and their ideas. The Haven teachers became fascinated by the children's ideas about what they think and know and where they think their thinking is located and explored this with the children on several occasions.

Sharon: *Josh had a little plastic lizard on his arm. He told me that it was his own little friend.*
Joy: *Tell me what friends mean to you?*
Joshua: *They like me, they play with me.*
Joy: *That's great. What other things do friends do?*
Josh: *They play toys with you.*
Joy: *How do you make friends with people?* (no response)
Joy: *Do you always have friends that talk to you or do you have other kinds of friends too?*
Josh: *Heaps of friends.*
Joy: *Well, tell me about some of the friends that don't talk to you.*
Josh: *No.*
Joy: *I'd love to hear. What about the one there (pointing to the lizard)?*
Josh: *He likes me/*
Joy: *I'm sure he does. How do you know that he likes you.*
Josh: *'Cos he loves me.*
Joy: *This is fascinating, Josh I love listening to your ideas. Can I ask you one more thing? Where does your brain go when you go to sleep?*
Josh: *It sleeps with me. I wake up when it talks to me.*

This dialogue is an excellent example of scaffolding. Joy maintained Josh within his zone of proximal development, developed intersubjectivity, at least from her own point of view discovered what Josh understood, and recorded the dialogue for later analysis to decide how to extend his ideas further. Because Joy was doing all the questioning, the 'dialogue' was one-sided, Joy held the power of the direction of the thinking and Josh never found out what Joy might think about where thinking happens.

For a teacher to be able to stay with one child's ideas for such an extended time requires considerable commitment to listening to children's ideas (the lines recorded above are about 0.2 of the whole dialogue).

Making links between many sources of ideas; knowing children really well

> *Jason was lying on the concrete, hands underneath his head looking upwards. 1 asked him what he was thinking about and he said "Just thinking about being in a hot air balloon". This was significant in that Jason had recently been in the planning cycle and whilst Sharon was observing him she discovered his interest in hot air balloons. We had just finished the action part of the cycle where Jason had been exposed to pictures, stories, Telecom advertising featuring a hot air balloon, experiments demonstrating how hot air rises and dramatic play involving building and sitting in a hot air balloon. Prior to our observations his parents were unaware of his interest and from what we understand he had only once seen a hot air balloon. We had had discussions with Jason about what it would feel like to be up in a balloon but we hadn't explored where his thoughts came from.*

These teachers made links in Jason's thinking from a large variety of sources: from his parents, Telecom advertisements and observations across many different centre sessions. Because of their detailed observations of children, the teachers have a wealth of information on any one of the children in their sessions, on which to draw when interacting with the children and their parents. The teachers and Cyril's parents were all surprised, though, when the teachers discovered how much he understood about his parents' wine-making processes.

Haven Centre: session with Cyril talking about wine-making.
Sunny day. Cyril and Brierly playing together in the sand pit.
Joy (Teacher)

Joy:	*Do you know what? Leah told me that you told her all about making grapes at the winery. She tells me that you know all about it. And I don't know anything about it.*
Cyril:	*I do. You pick the grapes at my place and you get some snippers to pick the grapes with off their stalks. And did you help me with my wheelbarrow?*
Joy:	*Where did that happen? At the winery?*
Cyril:	*No at my home.*
Cyril:	*OK. And then what happened to the grapes?*
Brierly:	*Alice busted it over again.*
Joy:	*What did she do? What did she bust over?*
Cyril:	*Our grapes out of our wheelbarrow. And we had to get some more.*
Joy:	*And was that disappointing?*
Cyril:	*Yes.*
Joy:	*So what happened when they got into the big hopper?*
Cyril:	*They coiled out and then they went onto that big crusher and then they went onto that great big long pipe. They went into the press.*
Joy:	*Into the press?*
Cyril:	*Yeh.*
Joy:	*Gosh it sounds as though you know exactly that happens there. I've never actually seen that Cyril. When it gets to the press, what happens to it then?*
Cyril:	*It turns.*
Joy:	*And what comes out?*
Cyril:	*Juice.*
Joy:	*OK.*
Cyril:	*The wine.*
Brierly:	*The water's run into both holes, yay!*
Joy:	*What happens to the grape skins?*
Cyril:	*They come off.*
Joy:	*Do they go through the press or..?*
Cyril:	*Off the press and they go to the pigs.*
Joy:	*No. The juice goes into some tanks. But not very much tanks.*
Joy:	*And then what happens?*
Brierly:	*And then we have water in the hole eh?*
Joy:	*I'd like to come and have a look at your winery one day. Do you think I could come and have a look at all the things you told me about? And Brierly your Dad works there to doesn't he?*
Cyril:	*And I'll show you how the grapes come into the winery and the truck tips up OK?*
Joy:	*Thank you so much for telling me all about that.*
Cyril:	*You go up the winery drive and then the winery is up another one.*
Joy:	*Another one what?*
Cyril:	*Another one.*
Joy:	*Another building?*
Cyril:	*No.*
Joy:	*Oh another driveway.*
Cyril:	*Another driveway through the middle.*
Cyril:	*No cause we are making it eh?*

At times Cyril and Brierly have chosen to ignore Joy's talking to them about another topic while they are engaged in their own explorations. In the above dialogue, Cyril is unable to ignore Joy's invitation to talk about the process that he knows well and is fascinated by, the wine-making at his parents' vineyard. He and Brierly continue with their activities while Joy queries his knowledge of the wine-making process. Cyril copes well with working in the past (discussing the wine-making process as he has experienced it), the present (continuing his exploratory activity with Brierly) and the future (planning a trip to the vineyard with Joy, even describing how Joy will need to drive in driveway if she is to find the vineyard, not his house), all in one short dialogue.

This dialogue formed the basis of a project on wine, as Cyril led the group through pretend experiences of making wine on several occasions, and organised a trip for the whole centre to the vineyard.

Relating ideas across activity settings

Joy: *I remember you did it like that last time, didn't you? You put them up like that, this way and then they kept falling over so you put them down flat. And now you've put them this way and they don't fall over this way either. That was really good thinking.*

Joy: (Girl wanting help with taking jersey off) *You've got hot again, haven't you, all of a sudden? Middle of summer again. Do you know, this morning when I looked out the window there was a mist around? I couldn't see anything.*

Cyril: *What mist?*

Joy: *Well, this morning it was not clear like it is now. Look over there, you see how it is all nice and clear. Well, this morning I couldn't see that far, I probably couldn't even see the house next door. Magical stuff.*

Cyril: *We couldn't either.*

Joy: *So there was mist at your place too.*

Other children: It's foggy.

In the above dialogue Joy has contributed more of herself than she has in many of her recorded dialogues. Later during the same session, Cyril returned to the topic of the early morning fog.

Cyril: *It was foggy this morning. We got fog this morning.*

Joy: *It was foggy when I was going to work. I wonder where fog comes from Cyril?*

Cyril: *A frog jumping around.*

Joy: *Sounds like frog doesn't it? Cyril, I wonder where fog comes from?*
Cyril: *From a waterproof catcher.*
Joy: *A waterproof catcher! It's absolutely fascinating.*
Cyril: *We do know waterproof catchers. We know, eh?*
Brierly: *Yeh!!*
Joy: *You'll have to tell me what they are. I don't think I have ever seen one.*

Lots of giggling

Cyril: *That catches bugs.*
Brierly: *Yes, eh, it catches bugs.*
Joy: *And what about the fog? Remember we were talking about the fog and you said it was the waterproof catcher.*

Joy followed Cyril's ideas about fog, though when she attempted to follow her own line of thinking the children simply ignored her and continued to discuss their own agenda.

Noticing children's cognitive achievements and voicing these

The teachers at Haven gave voice to children's achievements in the context of their previous activities:

Joy: *What's the meaning of these?*
Cyril: *Making stairs.*
Joy: *So you're doing this house with a staircase again, are you? I'm really interested in finding out what's inside that house when it's finished. Isn't that interesting? You did that last time too, didn't you? That's clever to get them to balance like that; it's quite tricky. Tell me if I can help you, won't you, Cyril?*
Cyril: *Here – they don't fall over like this.*
Joy: *That's very good problem solving, isn't it, Cyril? I remember you did it like that last time, didn't you? You put them up like that this way and then they kept falling over, so you put them down flat. And now you've put them this way and they don't fall over this way either. That was really good thinking.*

Respectfully checking that a child would like the offered assistance

Joy: *Do you want me to help you push them over? You are doing very well by yourself, aren't you? That's such good thinking Cyril. Do you want me to help push them round or is it how you want it? (C. breaks up the construction and moves around the reel).*

In noting that she might be able to assist the child, Joy indicated her empathy with what Cyril is doing. Her offer of assistance demonstrated her utmost respect for his rights to

achieve his aims alone and her feedback on cognitive performance ("such good thinking") encouraged him to do so.

Entering the child's fantasy play

While it is not always appropriate for adults to enter children's fantasy play, teachers at Haven did so tentatively and respectfully. The result was that teachers had another window into children's thinking and understanding.

Cyril: *Oh, ouch, I fell off the stairs (in pretend voice)*
Joy: *I'm pleased you got yourself back up again.*
Cyril: *Oh, I'm falling off.*
Cyril: *Look at this*
Joy: *Look at what? What are you showing me?*
Cyril: *You go from there, up there, into there.*
Joy: *I'd better move around again.*
Cyril: *Cyril's in there.*
Joy: *Is he? What's Cyril doing in there? I can see he is in there now.*
Cyril: *And then he comes along and goes crash.*
Joy: *Who's he?*
Cyril: *Hammer man.*
Joy: *A hammer man. Someone I know?*

Supporting the child's problem-solving and experimentation

Joy: *Let's have a look at it; bring it over here. Oh, it's all squishy; just needs a bit more mixing, doesn't it?*
Brierly shows her mixture.
Joy: *Yours needs a few more ingredients in it doesn't it? What else do you think it needs? Have a look up there at the recipe. Flour?*
Brierly: *Butter?*
Joy: *The scones had butter didn't they? We are making muffins now. What else do muffins have in them? You look at the cards, you'll see.*
Brierly: *It's too squidgy.*
Joy : *Yes, just a wee bit. Yes, that's right, there you go, now it's just about right.*

Teachers sharing their own ideas with children to extend their current thinking

Sharon: *Now, guys, look what I've got here. I've got some photos of children making concrete. We did this last year with some children. This little boy's really liked making concrete, so we made concrete with him. What he's doing here is he's getting some sand out of a bucket using a spade and he's putting it into this bucket.... So what do you think of that, you guys?*
Brierly: *What is her doing? Her is the teacher.*

Sharon: *Yes, her name is Lesley. She was putting the water in a bucket so that the children could add water to the sand and the cement in the bucket. Because that's how you make concrete. Do you know what you need? What ingredients do you need to make concrete?*

Sharon had observed Brierly's and Cyril's interest in making concrete and was able to contribute from her own experiences, working with a previous teacher. Photos are intrinsically interesting and Sharon used these to share her own knowledge of concrete making with these children. Co-construction of ideas takes place across time and space and children who no longer attend this centre have an influence on the learning of the current generation of attendees, through the mediation of teachers and documentation.

Returning to children's topics of interest with them

Schema theory can be supportive of identifying children's current thinking, as demonstrated in their patterns of activity (Athey, 1990; Nutbrown, 1994; Meade, 1995). An item from Haven's observations of Cyril included:

> *Cyril's work in the art area and his dramatic play suggested that he could be in an enclosure schema, e.g., recent paintings and drawings were contained in borders and he frequently put collage materials into boxes which he taped shut then painted. His dramatic play involved putting objects from the family room (plastic food, utensils, clothes) into backpacks for "camping" and camping often took place in the large reel.*

Here Joy made links between a variety of activities in which Cyril had engaged, with the idea of schema as her linking theory. In the following excerpts Sharon and Joy shared their excitement of Sophie's clear "transformation of participation" as evidenced through her increasingly complex representations of butterflies. Sophie's first drawings were of two ovals with some indiscriminate appendages attached; her later ones indicated Sophie's new understanding that butterflies, as insects, had three body parts (head, thorax and abdomen) with the wings and legs attached to the thorax (though the teachers had not introduced these terms, probably because at that stage they did not know them); these later drawings also showed much greater accuracy of the head and mouth parts.

Sharon: *Because we started talking about the folder and the beautiful work that this child did. Well, we can read what we said, then. She enjoyed*

[drawing] butterflies like that first, but a lot of them weren't so recognisable. And then all of a sudden she came out with that one and then another one on the wall, two in the other room.

Joy: *And this was when we got model butterflies and we got books of butterflies and pictures of butterflies and we had them all around and we had a real butterfly. We had all this displayed and we drew attention to it and ...*

Sharon: *And they were really interested in them.*

Joy: *And you know yes and she came out with that and some other ones that went up on the wall, yes.*

Barbara: *Are you saying that Sophie's awareness is increased between those two paintings, as a result of being exposed to models, pictures?*

Joy: *Yes and after she had been exposed to it this she had different concepts; [she could see that] it had a head and it's got eyes...and she knew the colours of a monarch butterfly*

Joy remembered such records and returned to them with the same child during recurrent interactions, to support the further exploration of ideas.

> *Luke had just created a rocket out of Mobilo and so I asked him where his ideas for making his rockets came from. He replied that his brain cells give messages to his fairies and then his fairies tell him how to make them. This is more advanced thinking than the previous week, as when I asked him the same question a week ago he told me that he gets his ideas from his fairies and that they tell him what to do.*

> *Duane had made a house out of Lego and so I asked him where his idea of making a house came from. He replied that the robot in his head told him how to make it. I asked him what else his robot taught him to do. He replied "Make all this" and gestured to the house that he had just made.*

Joy co-constructed dialogues through linking ideas across activity settings, noticing and addressing children's changes in their thinking and supporting them in making the links and the jumps to higher levels and between home and centre.

In the sense of the centre being a centre of inquiry, the ambience and expectations for inquiry and "thinking aloud" created there are vital (Lindfors, 1999, p.225). At Haven, children were encouraged to think and explain and discuss, with the teachers and with each other. The teachers demonstrated many skills of valuing and giving voice to children's activities and ideas.

Proposition Two: Co-construction of learning with children requires teachers to develop supporting processes, including the research of content knowledge of topics related to children's interests

Examples of Haven teachers developing supporting processes, including the research of content knowledge of topics related to children's interests, in the interests of co-constructing learning, are provided under the following headings:

- Analysing teacher-child dialogues
- Researching topics of children's interest
- Planning based on interests; displaying group projects; revisiting ideas, encouraging children to work with each other
- Collaborative goal-setting at Haven Centre, and involving the community in review of practices and policies
- Collaboration with parent, observations from home included in portfolio

Each of the above planning processes contributed to the teachers knowing the children and their backgrounds well, and during dialogue with each child, they were able to utilise this information in developing shared meaning. It is often difficult for young children to express what they know sufficiently for adults to understand their viewpoint. When developing shared meaning with a child, the better the understanding the teacher has of the child and her/his background, the more likely it is that she will be able to support the child's ideas through accurate interpretation and expansion. The curriculum document, *Te Whāriki,* was used at every stage of all planning processes.

Analysing teacher-child dialogues

Teachers who choose to record adult-child and child-child dialogues as a major method of observation of children, commit themselves to a considerable effort in organisation, collaboration with their team and time. That they persist in this method of data collection for their planning is testimony to its perceived advantages, not only for the current focus children but also for the whole group of children. The Haven teachers were very clear about their reasons for recording dialogue.

Joy: *We found it to be a much more efficient system than written observations. It does take time to listen to the tapes then write out the observations, but as we have committed ourselves to convey the best possible outcomes for children based on our observations, is a worthwhile exercise.*

Facilitator: So, why are you recording language, what are you trying to find out?

Joy: *We're trying to find out their interests; another thing we discovered using this, which we haven't written down, is that our observations have become much more detailed and more valid, in the sense and we actually are looking for more interesting things to observe rather than just observing stuff that goes nowhere really.*

Sharon: *We also found that we started observing,* ***not only children who are in the planning cycle but other children as well. If we see something really exciting, we just quickly run in and grab it (the tape recorder).***

Joy: ***Also for other children who aren't in the planning cycle but when its their turn, we'll say, "Oh, that's right, there was that observation from then," and we're starting to do that too, aren't we? Getting information from other sources than the current planning cycle.***

Barbara: *Do you find it anchors those children in your memory more and what they were talking about?*

Joy: *Oh. absolutely. Children...****even the children, say last year, I remember so well****....*

Barbara: *What they talked about?*

Joy: *Yes, but it has improved enormously since we actually started tape-recording rather than writing because it's just a physical and difficult act having to write it.*

The **bolds** in the preceding texts are mine; note in particular the teacher's references to the value to the children not in the current planning cycle, of having been in previous cycles. This was a recurring theme in every centre I worked in; it is also central to the reason for advocating the effort involved in this method of planning. There would be little point in teachers spending so much time and energy planning for a small number of children, if those children did not continue to benefit from this planning once they were no longer the focus of planning and if other children did not also benefit from the plans developed specifically for them. Both these conditions are reportedly fulfilled in every centre that has planned in detail for focus children and maintained good documentation on these.

Researching topics of children's interest

The Haven teachers used many sources of information in their search to extend their own knowledge on topics of interest to the children; they referred often to the fact they needed to find out more about these subjects to be able to extend the children.

Joy: *Yes, well I mean, I've got that [Encarta] at home, Endangered Creatures and all that sort of thing. We've also got four lots of concept of development books and though they're old they're good.*
Sharon: *He's really into rockets.*
Joy: *And then this was another, I suppose. He's in the planning cycle at the moment so we've got lots of rocket books and all these sort of things...he's just sort of starting to represent his thoughts.*
Barbara: *He might be interested in drawing plans, too.*
Sharon: *And he knows there's an explosion. The other day we were looking through a book, weren't we, Joy and it was talking about gravity and we had a really good discussion with him the other day.*
Joy: *Yes, it was quite detailed...in other differences [now]* ***we tend to make things more difficult more challenging in a sense for them, like we think, ooh is this too hard?***
Sharon: *They always understand though...gravity, I mean. But we put it a way for them that's easy for them to understand, don't we?*
Joy: *Well, you did that and I thought you did that so well.*

The teachers constantly supported each other's ideas; researched topics of interest to the children; used what they knew of the children's understandings to extend these; and as in the highlighted quote, acted as what Meade (1995a) would call "warm demanders", complicating rather than simplifying things for children in the interests of extending them cognitively.

Haven teachers learned to value the technology discipline content for extending their own and subsequently the children's understandings in this area. Immediately on their return from a national workshop, Sharon and Joy were keen to apply some new learning to their own centre. Having both attended the same workshop, they were able to support each other in implementation, as reported here:

> *The learning for us is really good. (We) learned from Katz that a theme means covering a subject whereas a project is uncovering a subject. Katz taught us that we need to draw on children's predictions. We have kept an experiment with hyacinth bulbs going; two in a cupboard and one on a shelf.*

The children think the ones in the cupboard are doing better; we are supporting them in their skills of predicting. Some children counted the number of roots on the bulbs; measured the length of the longest root in each space and they were the same; many saw that the one in the cupboard had a flower on it. From (Facilitator) at her technology workshop we learned about getting children to design their own container for a bulb and then to make it.

As a result, they accessed Technology in the New Zealand Curriculum (Ministry of Education, 1995) to help develop interest in supporting children's understandings in this subject.

Planning based on interests; displaying group projects; revisiting ideas; encouraging children to work with each other

With Cyril I wrote out the recipe. He said that he wanted to use the yellow scoops for measuring the sand and the red scoop for the cement and "A jug of water so I can tell Dion how much to put in". The first time Cyril made the concrete with Dion watching. We tried to encourage more dialogue by suggesting that Dion then made the concrete and Cyril watched and helped him if necessary.

Joy: *'Way you go. You have to use your words to explain to Dion how to do it. How about the recipe up here? What are those ingredients?*
Brierly: *Sand and cement.*
Joy: *Ok, well, you teach him how to do it. We won't say anything – you just show how him how to do it.*
...
Joy: (She could not say nothing!) *How much sand do you put in? You show him how he knows, Brierly. You tell him and show him what to do.*
Brierly: *You put that much scoops in* (pointing to recipe cards).
Sharon: *And how many scoops do you need, Cyril?*
Cyril: *1,2,3,4.*
Sharon: *And how many more does he need, Cyril? He's done 1,2,3...*
Sharon: *Perhaps you could help him, Cyril. Now one scoop of cement. How much water do you need to put in? How much do you think you need? That much?*
Dion: *I know how to do it now! I want to mix it now. What do I do now?*

When set, the first mix was very crumbly, falling to pieces when jumped on (the test for good concrete was that it would not break when the teachers and children jumped on it). On returning later to discuss the problem of the crumbly concrete, Cyril announced that "we need a recipe for concrete", based on his and Brierly's experiences of developing

their own recipes for muffin, and demonstrating his understanding through suggesting the need for a recipe for concrete (not a term the teachers thought of using in that situation). In mutual discussion based on their previous experience, the children and teachers wrote their recipe for concrete, with the correct proportions of sand, water and cement. Cyril's mother reported, "Last night the talk was all about concrete. He told me that the first time it was too soft and it broke easily when it was set. I asked, 'So what did you do?' Cyril responded, 'We got a recipe and more cement and did it again'."

In the follow-up episodes of concrete making, Cyril was given increasingly more responsibility in decision-making about the equipment and the materials. The teacher modified her expectations of Cyril, contingent on his experience and understanding and on his current ability to fulfil the increased expectations. Further evidence that Cyril's understanding of the use of recipes had been transferred to other situations came from Cyril's mother:

> *The other day he was playing with Lego at home and from the Lego we have always kept the instruction sheets and he said "I'm getting the recipes. I'm going to build the Lego from the recipes." It was the transference of the concept of a recipe into an instruction sheet. He sees anything like that now as a recipe. He was talking the other day about Dad fixing his sister's bike and he wanted to know did Dad have a recipe for that?*
>
> *He's now getting a lot out of his play. In the last ¼ hour he has turned the clothes basket upside down for his oven. At pre-school he told Joy all about wine making; the steps were absolutely perfect. We knew he was comfortable at the winery and was picking up the process OK. We had no idea he knew the process from beginning to end. It's amazing what they say if given the opportunity. As a parent I didn't ask those questions. I've been blown away by his scone making.*

Collaborative goal-setting at Haven Centre and involving the community in review of practices and policies

In the institutional plane, centre planning at Haven was based on the manager's clear philosophy of community involvement. Processes in support of this philosophy involved: an annual review of the centre charter; regular review of centre policies and practices; and adjustments to the centre routines and layout and constitution of learning centres in response to observations and discussions with children, staff and parents.

The two key teachers in this programme were very clear about the outcomes they wanted from their professional development. At the beginning of the year and before the professional development programme began, they had engaged in a goal setting exercise. Each teacher had written their personal long-term goals as teachers and together they had identified their common goals. Items included:

> *to affirm each other and to appreciate each other's unique qualities;...to support each other in peer assessment; to focus professional development on improving skills in analysing children's conversations as a means to focusing on their interests for programme planning; implementing child initiated projects.*

These teachers set conjoint long-term goals for their centre at the beginning of the year – evidence of excellent collaboration set for the year.

> *To make Haven Kindergarten a model centre of quality early childhood education and care; to provide a safe, caring, nurturing environment for adults and children; to affirm each other and to appreciate each other's unique qualities. We agree that positive criticism will not be considered personal and we will support each other in peer assessments....Continue to purchase new equipment.*

Collaboration with parent, observations from home included in portfolio

My contact with the parents of the focus children included ringing them each evening for a week during their child's time as the specific focus of planning. The following dialogue shows a clear link between the teachers' discussions of schema theory with the parent and the subsequent observations the parent made of her child's work at home.

> *Cyril is always putting things into envelopes; making a carton into an aeroplane; making mail boxes. He cut up a Weetbix box that he had as his mailbox and said that he had to have a new mailbox. He was very determined as to how it was to be constructed. He spent the next 1/2 hour posting mail to people and took it to bed with him.*
>
> *Everything he got for Easter went into a box; he attempts to write and everything he writes goes into an envelope; questioned his older sister about names, who the letters are for and where they're going; giving people mail; wrapping presents; making huts. He wanted to get into a friend's puppy box. The winery where his parents work is a big part of Cyril's life; when there he often fills containers with water.*

These observations from home confirmed for Cyril's parents and his teachers that the idea of on an enclosure schema is a useful one to consider when planning to extend his thinking. The concrete setting in containers, which Cyril himself chose, addressed this schema. Examples of collaboration with parents abound in the records. In the next excerpt there is evidence the teachers have systems in place to ensure they do share children's activities with their parents. On her dictaphone, the teacher recorded her observations of children working.

> *He's working in the sandpit with two other children, they've dug a trench and they've placed five cones in a straight row above the trench. He said that the cones were to show where the bridge was going to go. Other children who joined in and starting digging along by Joshua. I know why I did this now. He picked up a rake and said he was going to scrape the holes out. He said, "When I use the spade I'm digging and when I use the rake I'm scraping" that's why ...* ***and I yeah I suppose you know we put in these bits, probably an outcome is that the parents would find that really interesting when we relate it to the curriculum because we always write it out just ... the words and personalise it.***

Facilitator: We're going to watch the video and analyse the info you have on them both. And your written ones.

Joy: And the data we've got ***here from parents. We've had some discussions with parents.***

Cyril's mother was very enthusiastic about his interactions with the teachers and children at the centre:

> *Cyril's discussions of the trip to the farm have been intriguing. Joy had been the first to try with "Let's have a talk with Mum about the trip". When asked "Do you remember who you sat next to you on the bus?" has led to far more recall.*

> *We saw the first tape last week. He'll be sitting in the car on the way to the centre: "One day Claudia and Rebecca can come to our place and see what we've got here. We couldn't ride sheep though." So he's making good links in this way; he went to Claudia's place, so they can come back here.* (Note here the example of Cyril feeling empowered to make such suggestions and decisions, knowing that they will be taken seriously).

> *Cyril receives good nurturing at the centre; his thinking is being stimulated all the time, in a very rich environment, with adult input.*

From the process cooking at the centre, Cyril is now very interested in making scones at home. Watching me he said "Mummy when I do my scones I put more milk in" (and he was right, the mixture needed more milk).

On one of the tapes we talked to Cyril about the farm visit. He had so much recall from the trip.

He has an adult outlook "I have my work to do". It's phenomenal what he does. His older sister, Alice, always had an active imagination. Cyril is brought in to this. He plays his role, including the proper accent.

We're so enthused about what he's doing (at the centre). It tunes Grant and me into listening to what he is saying. ***I think the listening has changed (here and at the centre).***

From the staff asking me what he has been doing, they have tuned me into schema, which he may be using at home and at the centre. I just needed to know what to look for.

The teachers are always very happy to educate the parents. They always give feedback on what C. has been doing during the day. Now they are also interested in his thinking, as well.

Brierley's mother was very aware of the teachers' efforts to encourage peer collaboration with the children, based on each child's interests and strengths.

Kids at the centre get on so well; therefore they are happy to share. They support each other, co-operating a lot of the time. It's wonderful to see. ... Brierley is getting so much from where she is.

Haven parents really appreciated the efforts the teachers put into maintaining profiles for their children.

They have just done the books [portfolios]. We're absolutely amazed at what's in it. How do they find the time? They have noticed Brierly's strengths and interests and picked up on the strengths.

The parents of the focus children at Haven indicated how much they valued their close communication with the teachers about their children's learning.

> *Today Cyril and Brierley came home together; they talked non-stop. There must be new rings at kindy today; no talking about concrete, it was all about the rings.*
>
> *We have a computer, which B. had not touched. However, last w/e she became more independent on it. I think this is from using it at kindy, she has learned how to use it properly.*
>
> *I notice little things in her thinking all the time. It blew me away when I said the "f" word"!! I used the cold water and said "It's freezing". She growled at me for using the "f" word. I had no idea she could match the sound of f across words like that. We've been concentrating on the letters in her name – B in Brierly.*
>
> *Kids play with the kids they associate with at home. The concrete interest comes from construction happening around here. They've seen cranes, concrete, the works.*

Proposition Three: Facilitator/teacher co- construction of research, is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children

Haven demonstrated many examples of refinement of the practices that occurred during the period of their programme of professional development. These outcomes are presented here under the two major sections of outcomes for the children, and outcomes for the teachers.

Outcomes for Haven children

In this section, the following outcomes are identified for children at Haven as the result of the teachers' professional development, with examples from research transcriptions.

- Children engaged in higher order (metacognitive) thinking
- Children engaged in activities of real interest to them
- Children's memories reinforced through teachers' emphasis
- The teachers were aware of the children's understandings through dialogue analysis

- Children's thinking was extended.

Children engaged in higher order (metacognitive) thinking

In each of the four case study centres, a minor revelation with major implications for the teachers was that it is possible to return to the child's ideas on future occasions. Collecting dialogues allows teachers to analyse topics of interest to the children that they could have extended. Rather than viewing this negatively, as lost opportunities, teachers realise they can take these ideas back to the children, after discussing possible ways of extending them with each other, with the parents and through their own research. As the teachers themselves reported:

> *In discussion with Barbara and (Facilitator) the following observation with a child came to mind. Joshua was moving the slime around and around squeezing it between his fingers. When asked to describe how it felt he said "Squishy, smooth, soft, cold". He paused briefly then said "It makes me dream – it goes into yourself and makes you dream – goes through a little door" When I was writing up this observation I did feel that it was interesting and probably significant but I didn't really know where to take it. Barbara suggested that we could have possibly explored the child's ideas of dreams, where they come from etc and (Facilitator) suggested that it was possible to renew the conversation by saying "Do you remember when you were playing with the slime and you said ----". Josh was sitting at the computer. I sat down beside him and when there was a break in the programme the following conversation took place.*

Joy: *Josh, do you remember the other day when you were playing with the slime and you said it went inside you and made you dream?*
Josh: *Yes.*
Joy: *Where did you get that idea from?*
Josh: (with finger on his forehead) *From my brain.*
Joy: *How did your brain give you that idea?*
Josh: *Because it is magic, because it talks to you.*
Joy: *How do you hear it?*
Josh: *I have ears inside.*
Joy: *Do you mean you hear your brain through your ears?*
Josh: *Yes.*
Joy: *Can I hear your brain?*
Josh: *No, it's not talking to you.*

> *Where do we take this? Traditionally we would probably have got books pictures, etc., looking at the brain and ears; experimented with sounds, etc. I realise that 1 haven't yet explored Josh's ideas about*

*dreams but now understand that it is not too late!! **NB:** Without the use of sound recording equipment these conversations would have at worst been lost and at best summarized, loosing accuracy and detail.*

These teachers' discussions about transcriptions of their dialogues with children, were central to their understanding of children's thinking and their planning to extend this.

The Haven teachers supported children in relating their ideas across activity settings in many ways, as recorded throughout this case study. In the above example the same idea was revisited within the same session, as frequently occurred. Other methods of linking of settings included: discussions with parents, so that children's interests were extended between the centre and home; the planning process, that identified children's interests and systematically provided a variety of related activities and projects with the children; the use of photographs of children's previous activities to prompt further discussion on similar topics; maintenance of individual profiles, which were continually updated and frequently referred to and accessed by teachers, children and parents (see next section). Changes in observing procedures and the use of observations in planning were valued by the teachers:

Observations are more detailed and valid on both focus children and the incidentals (non-focus children). We have learned more about what children were thinking and then planning to extend ideas and interests based on this, through our improved processes of recording and analysing their dialogues.

Changes in setting learning outcomes for the children based on these observations are more specifically aimed at supporting children's higher order thinking skills. Note an influence on the teachers' thinking of knowledge of the Technology in the New Zealand Curriculum (Ministry of Education, 1995) in the following excerpt:

The most significant change that happened for us as a result of discussions with (the Facilitator) was our questioning of our current practices re the learning experiences we provided to achieve learning outcomes. We asked ourselves whether these learning experiences really challenged children's thinking as well as extending their interests and knowledge, e.g., on referring to our previous plans for learning outcomes and the evaluations we had completed we could see that a shift in emphasis was occurring in our thinking towards more ongoing

evaluation of the changes in children's thinking, for example, a previous learning outcome for a child interested in concrete was that he 'would experience making real concrete and gain a greater understanding of the process involved'. Learning experiences provided the equipment and recipe to achieve this. The evaluation noted the child's level of interest and pleasure and the fun he had breaking up the concrete after it had set. Our current learning outcome for children with similar interests is that they will have the 'opportunity to plan, predict, experiment, record and evaluate the process of making concrete' and the learning experiences provided for experimentation with quantities/ratios of sand, water and cement and the results evaluated with the children. Children were able to make their own decisions re containers, mixing equipment, tools and location.

Children engaged in activities of real interest to them

The teachers' planning with the children "hits the nail on the head" more often, because of the greater accuracy in observing:

Facilitator: And you think you're doing different sorts of extension, you think you might be providing different activities, different interactions, because you're extending them based on more knowledge of them?
Joy: Well, I think it's probably more valid because it's based on all knowledge of them, isn't it? So I think you more likely to hit the nail on the head, so to speak, do you? Do you know what I mean?
Facilitator: And you seem to be always hitting the nail on the head.
Barbara: And before you didn't?
Joy: Well, I think it's probably more valid because it's based on all knowledge.
Barbara: Sometimes you didn't before?
Joy: Sometimes before we were right off beam.
Barbara: And the kids weren't interested?
Joy: No. And you'd think, 'Why didn't that work?' So although what we planned was expected to be a real interest to the children, they just often weren't interested.

Children were more central to the processes of planning, their voices were valued and the activities provided for them were authentic in the sense of being related to their own interests and strengths, as results of their teachers having learned to hear them. The ongoing projects that the children were involved in were simplified versions of real-life activities from the children's cultural backgrounds, such as developing recipes for

baking and for concrete making, and experiences in the processes of making wine and concrete.

Children's memories reinforced through teachers' emphasis

Parents noticed that Haven teachers interests played a role in reinforcing their children's understandings.

Cyril's Mum: I can see that Cyril's dominant memory depends on what is reinforced for him and this does not always come directly from Cyril. The things that are sticking seem to be the ones he's been questioned about.

Here Cyril's mother articulated an example of the social mediation of learning. Cyril seems to have internalised ideas about the topics in which his teachers demonstrated their interest, through their questioning.

Teachers aware of children's understandings through dialogue analysis.

The Haven teachers developed their own systems for ensuring that they could record their dialogues with children.

Joy: However, we found it [transcribing tapes] to be a much more efficient system than written observations. It does take time to listen to the tapes then write out the observations, but as we have committed ourselves to convey the best possible outcomes for children based on our observations, this is a worthwhile exercise. We discovered that we needed to remember the size of the tape we were using, to check that a tape was in the recorder before using. We now have a spare battery for the camera as we have discovered the frustration of running out of battery and we also have two tape recorders for the same reason.

Sharon: And to keep the equipment in specific locations. We're learning by trial and error and we are getting better with practice.

Joy and Sharon talked about what the children in their centre knew and understood:

Joy: We know we are going to make concrete. We were talking to some of the other children today and they think the same, that it's got salt and sugar in it.

Sharon: Actually, Brierly knew that you mix it with water, Cyril didn't.

Facilitator: It's all that cooking they've done with recipes.

Joy: Yes and yet they do it all the time in the sandpit, mixing with water.

Children at Haven used their experiences in creating their own recipes in cooking muffins, in other activities for which written directions would support their problem-solving. The sociocultural principles demonstrated here include the transformation of participation across activity settings, re-presentation of ideas, and semiotic mediation of learning.

Outcomes for Haven teachers

The Haven teachers discussed outcomes and some issues of the research process, summarised in the following topics:

- Value of improved use of technical equipment
- Empowerment of children
- Valuing of discipline knowledge for children's learning
- Difficulties encountered in the research process.

Value of improved use of technical equipment

> *Technical equipment (audio and video) use has improved, is used more and is used more effectively and frequently; the goal for using children's conversations has been met – we are using more conversations when planning; the children's profile-writing system has been clarified.*

> *Using a dictaphone to record conversations between staff and children and to record observations in detail ensured that valuable information was not missed, lost or forgotten. Video recordings gave us all of the above plus the opportunity to replay the moment, observe group interactions and provided a focus for discussion, evaluation and self-reflection. Staff had to be willing to spend time out of hours both in professional development and in planning for children. Staff needed to extend their own knowledge, e.g., how to make concrete and resources had to be available for the extension of ideas and interests.*

Empowerment of children

> *Children have been empowered to develop their own thinking and to control their learning by experimenting, by not worrying about the 'correct' answer. Planning is becoming more accurate, children are being excited and interested in the experiences provided.*
>
> *Before planning to extend thinking it was necessary to know what children were thinking. This involved observing children's actions, listening to their conversations, with each other and teachers involving children in meaningful conversations about their thoughts and ideas. This was essential to provide a valid basis on which to focus and identify areas for extension. Involving the parents in this process enabled us to gather valuable information for both planning and evaluation. For this to happen staff had to organise their time, be focused on the task and committed to extending children's thinking.*

Valuing of discipline knowledge for children's learning

> *Awareness has been raised about the meaning of technology, e.g., looking at children's work and the processes they have gone through to create constructions. Also importance of ensuring that the materials for technology are available: tape, stickers, string, staples. Valuing technology in terms of their thinking processes – discussing it with them; how they have solved problems. All of this was learned through attending the Facilitator's conference workshop.*

Difficulties encountered in the research process

Learning for Haven teachers was not achieved without threats and difficulties: On their first videotaping session Sharon taped Joy attempting to engage Cyril in conversation. Joy said:

> *I felt very exposed and very aware that because others were going to be watching that I wanted to say and do the right things. I was thinking about every question, something I never normally do. It felt very unnatural and uncomfortable. Often when I am interacting with children I don't get the response I want but it doesn't matter as I'm not being observed or recorded. Sharon's feelings were very much the same. The initial reaction was to wipe the tape and start again. However, we decided to put personal feelings aside and had a brief discussion about what we learned about Cyril (re dramatic play, block construction, problem solving skills, his thinking about his*

thoughts). We anticipate that we will become less self conscious and more natural as we become more used to being taped. We are going to keep the video ready for action and if we see each other engaging in conversations with the children we will tape if possible.

Comments that testified to a lack of total success in maintaining the established ethical guidelines from the Facilitator's perspective included:

As the programme was also part of a research programme some areas were difficult. These included where Barbara had made contact between sessions, collected all the interim data and left the centre (and myself) unsure of what my role at our next meeting was. I felt that the programme was led by the research rather than by reflection and identification of areas for centre development. I would love to know what topics we would have covered if the research had not been there? It may have been no different! Or it may have been quite different.

And from the teachers' perspective, an outcome I would not have expected:

Planning for other children was temporarily halted while we planned for the same two children to fit in with Barbara's research.

Here, the teachers were seeing their work with the children as satisfying my needs, rather than as an integral aspect of their own reflection and action research process. If the latter had taken them in a different direction but for my presence, then that is what I would have expected to happen. The doctoral research proceeding alongside the programme of professional development did have effects of which I was unaware at the time, and in spite of the safeguards set up to protect against this. As the researcher, I found it very difficult to convince the teachers in all four centres that I truly did not want my research to guide their professional development (such is the pervasiveness of the common understanding of the researcher/practitioner relationship); that I had no preconceived ideas of what the outcomes would be of their professional development; and that it would be quite appropriate should they choose to divert the direction of their professional development change from their original intended focus of listening to children's thinking. In this one centre where I was working through the key facilitator of their professional development programme, it was even more difficult to maintain these

intentions. On one occasion misunderstanding occurred, (as above), when I called in to the centre and was provided with their most recent data, before it was shared with the facilitator.

It seems that this group of teachers to some extent followed their perception of the requirements for my research, as evidenced in their strong emphasis on asking the children where they thought their thinking came from. This interest could have been further extended through a more focused sharing of theories of mind with the teachers.

6.5 SUMMARY HAVEN CENTRE

The planned outcomes for children's learning at Haven included the empowerment of children in decision-making, in problem setting and solving and in developing their metacognitive and higher order thinking skills. Children in this centre were given agency, as they were encouraged to collaborate as fellow learners/inquirers with their peers, with their parents and with their teachers. Learning for all participants here was the outcome of good relationships and collaboration across the three planes of participation, including across space and time.

Haven's "community of learners" included a large number of people and artifacts, present and past, including children, teachers, parents, outside "experts" in the form of their professional development facilitator, conference presenters and myself, as the researcher. Artifacts included the use of texts and other media for the research of topics of children's interests, the computer, tape recorder/dictaphone and video recorder for the recording of these and of course the multitude of equipment to be expected in a well-resourced early childhood centre. The teachers themselves reported

> *Professional development improved quality of questions, e.g., where did that idea come from? We now realise that the moment is not lost and we can "Go back to the children and ask them" (Barbara and Facilitator). Giving the children the opportunities and the freedom to experience and explore, e.g. enabling the children who were proficient in process cooking to create their own cooking recipes demonstrated that they had an understanding of the concepts involved rather than just a skill in following a process. Asking children to show each other demonstrates their own thinking. Viewing video recordings and*

listening to their conversations where they are acting out and verbalising their thoughts has been a powerful tool in helping us get inside children's heads.

6.6 CHAPTER SUMMARY

Key ideas from sociocultural theory have been provided from the records of the professional development programmes reported from three case study centres. Concepts demonstrated include the development of intersubjectivity between participants, spiral reciprocity between planes of activity, the development of a community of learners in support of co-constructing understandings with children, the value of authentic experiences in learning, and the role of teachers as senior semioticians.

The development of intersubjectivity that is central to co-constructing understanding with children was the focus of work with Terrace Centre. This work led to the development of the model depicting three levels of intersubjectivity (p. 177), each level related to different types of teacher-child interactions.

At Kauri the spiral reciprocity between planes of activity was a useful concept in supporting the teachers' understandings. Teachers made links between their own past and current thinking, they worked to incorporate learning from their ERO report into their planning from their new understandings of sociocultural theory, and Frances's father was able to contribute to the teachers' more appropriate interactions with the children through his feedback on the photographs of Frances "playing dead". Co-construction between home and centre was a feature of this centre, and collaborative planning related ideas from several sources to children's learning.

A community of learners, with activity in all three planes, was functioning well at both Kauri and Haven. These centres exhibited excellent relationships with the parents; Haven had a comprehensive system of reporting to them and both centres involved parents in their centre programme. Haven set collaborative goals that specifically involved their venturing into the community. Haven teachers also worked to develop children's peer relationships and supported them in sharing their expertise with each other.

All three centres had a planning system that encouraged the development of projects based on children's interests and strengths. The topics of these projects, on which the teachers conducted their own research when necessary, included cooking, developing a mail delivery system, weddings, sea and sand, and making wine and concrete, all of which were authentic activities from the children's everyday lives. Through engagement in such projects children were encouraged to return to their self-set problems and develop skills in problem-solving, decision-making and collaboration with peers, at ever-deeper levels of thinking.

As the teachers in each centre developed their skills of interacting with children they came to understand their roles as senior semioticians, supporting children as they made links between signs and meanings in their cultures. The use of recipes was especially valuable in making such links, as children talked about measures from a recipe and experienced the products, testing the concrete and the muffins with varying amounts of ingredients. The model of intersubjectivity (Figure 6.1, p.177) was especially useful in supporting one Terrace teacher in her role in co-constructing with children in a map-making exercise, during their project on mail delivery (see Section 6.3.3). Later, Haven, Kauri and Manuka teachers agreed that model was a good representation of their various ways of interacting with children. A collation, often by the teachers themselves, of the items contributing to teacher-child interactions identified for the four case study centres, is included in Appendix D4. Chapters Five and Six of this report have provided representative examples from transcriptions of teacher-child dialogues and from facilitator-teacher action research records, for each item under the three propositions for each of the four case study centres.

CHAPTER 7

PLANES, RECIPROCALLY SPIRALLING AND AS A WHĀRIKI

7.1 INTRODUCTION

Questions central to this study at its start were:

1. *How is children's learning being scaffolded in early childhood centres? and*
2. *What content knowledge and professional development processes support staff teams as they learn to scaffold children's learning?*

During the pilot study these questions were transformed into three propositions.

Proposition one:

> Teachers scaffolding children's learning require the use of many interaction skills.

The generic concept of scaffolding as discussed in Section 2.3.2 (p. 38) and in the Pilot Study (p. 88 - 92) with component aspects identified in Table 4.2 (p. 90), was not challenged in the Pilot Study, or the first case study centre.

Proposition two:

> Scaffolding learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Supporting processes included all aspects of planning at the institutional level. Teachers need to be clear about their philosophies of learning and where this includes a valuing of the child's voice and empowerment of children in their own learning, processes such as routines and groupings of teachers and children need to be developed in support of these.

Proposition three:

> Facilitator-teacher co-construction of research (used here synonymously with the term action research) is effective professional development. With such critical reflection a change in philosophy can either lead or follow a change in interactions with children.

It is more natural in our (Pakeha New Zealander) society for adults to work collaboratively, than it is for adults to share power with children in a similar manner. The terminology of co-construction was used implicitly in Proposition Three from the first formulation of the study propositions. Reflecting both on their own experiences of best practices of dialogues with children and on our co-constructed adult dialogues, provided links between our co-constructed professional development and the ways in which sociocultural principles suggest teachers work with children; these links were identified in Table 3.1 (p. 72).

At the start of our research the teachers and I were especially interested in identifying what it was they did when engaging with children's thinking and how they could improve such engagements through building on children's interests and understanding. As the study progressed, we identified differences between scaffolded and co-constructed interactions (Rogoff, 1998; Stone, 1993), especially as the basis for developing ongoing projects with the children that empowered the children. One function of this analysis chapter is to identify those skills and processes in common and those that were different, when these teachers were scaffolding learning for children compared with when they were co-constructing learning with them, as these terms have evolved during this study. A model of intersubjectivity (Figure 6.1, p.177) depicts the varying degrees of shared understandings that are developed between a teacher and children depending on whether the teacher is operating in a) a co-constructive, b) a teacher-directed or c) a child-directed mode of interacting. As discussed in Section 6.1 (pp. 152-153) and worked through with the Terrace teacher in case study two, Section 6.3 (pp. 171-182), scaffolding came to be viewed by the teachers in case- studies two, three and four in the narrow sense of teacher-directed activities that support children's task achievement. Co-construction is the term used for teacher-child interactions in which teachers share their power with children, encouraging children to accept as much

of the responsibility for their own learning as they are able, and especially sharing in planning activities and projects based on their own interests and strengths.

The research questions had thus become modified during our action research to: "what skills and processes do teachers in early childhood centres use to **co-construct** understandings with children?", "are these skills and processes of **co-constructing** understandings different from those of scaffolding and if so, how are they different?" and "What content knowledge and professional development processes support staff teams as they learn to **co-construct** children's learning?" The revised propositions that addressed these questions were:

Revised Proposition one:

> Teachers and children co-constructing learning require the use of many interaction skills.

Co-constructive interactions are premised on the maintenance of intersubjectivity between participants, in which both the children and the teacher are free to initiate and direct the direction of investigation. Participants respond reciprocally to each other, acknowledging and challenging ideas in a community of learning, each taking the lead on topics with which they are the current expert of the group as meaning is socially constructed, in an environment of shared power.

Revised Proposition two:

> Co-constructing learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.

Centre routines and groupings of children at the institutional level may be similar under scaffolding and co-constructing philosophies, in that both value hearing the child's voice. However, planning processes for co-construction will favour more flexible projects and evolving activities, allowing children and teachers to plan future events together.

Proposition three (unchanged):

> Facilitator-teacher co-construction of research is effective professional development; with such critical reflection, a change in philosophy can either lead or follow a change in interactions with children.

Table 7.1 relates the research propositions to the planes in which activity occurred, and the items of this activity.

Table 7.1: Aspects of centre planning and curriculum implementation located in three planes of activity and related to the research propositions

Research propositions	Aspects of centre planning and curriculum implementation	Planes of activity
Proposition one: Teachers co-constructing children's learning require the use of many interaction skills.	Recording teacher-child dialogues; teamwork between teachers and with parents. Teacher-child interactions.	The interpersonal plane
Proposition two: Co-constructing learning with children requires teachers to develop supporting processes that value children's voices and to research the content knowledge of topics related to children's interests.	Routines and systems developed for programme planning and record keeping. Team philosophy of learning.	The community/ institutional plane
Proposition three: Facilitator-teacher co-construction of research is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children.	***Outcomes for children:*** Evidence of transformation of participation across activity settings. ***Outcomes for teachers:*** Changes in individual teachers' philosophy of learning and in use of skills and processes.	The personal plane

(Revised from Table 5.1 to reflect co-construction in place of scaffolding interactions between teachers and children).

The skills and processes of propositions one and two, in the interpersonal and community planes, contribute to outcomes for children, as their transformation of participation, during the period of the teachers' professional development. These outcomes for children, in their personal plane of activity, are depicted in Figure 7.1, (p. 224).

The effectiveness of the teachers' professional development is demonstrated in three planes of analysis. The changes in teachers' philosophies of learning (in the personal

plane) and their interactions with children have been identified in Chapters Five and Six. In addition, factors were identified in the community plane that contributed to these changes for teachers; some of the community changes were the result of the professional development while others were already in place in the centres. Outcomes and contributions to the programmes of professional development are represented as the spiral reciprocity of planes (Figure 7.2, p.232).

7.2 PROPOSITION ONE, THAT TEACHERS USE MANY SKILLS IN CO-CONSTRUCTING UNDERSTANDINGS WITH CHILDREN

Evidence of this proposition is found in the interactions of the interpersonal plane of activity (see Table 7.1, p.216). The following lists are the interaction skills identified in our transcripts of teacher-child interaction across the four centres. In categorising these lists under the headings of those items common both to scaffolding and co-construction, with separate sections for each of scaffolding and co-constructive items, I make my working interpretations of scaffolding and co-construction explicit.

7.2.1 Interactions contributing to both scaffolding and to co-construction

Teachers in the four case study centres demonstrated the following interactions, whether they were scaffolding learning *for*, or co-constructing learning ***with*** children (representative incidents are referenced by page number):

- maintaining warm (trusting, reciprocal) relationships (Manuka, p.126 Terrace, p.181, # 5; Haven, p.184)
- encouraging children to work with each other (Manuka, p.130; Terrace, p.181, #3)
- the use of artifacts, such as equipment, photos of previous activities and teacher-child discussions that made links between current and previous activities (Manuka, p.131; Kauri, p.163; Terrace, pp.178-179; Haven, p.187)
- verbalising children's activities in support of their learning (reciprocal responding) (Manuka, pp.123-124; Haven, p.184)

7.2.2 Scaffolding interactions

When scaffolding learning for children, teachers in the four case study centres demonstrated the following interactions:

- developing limited intersubjectivity with children through narrow questioning techniques, with particular knowledge outcome in the teacher's head (Kauri, p.164; Terrace, pp.172-173).
- demonstrating and structuring skills, providing feedback on cognitive performance through noticing children's achievements and voicing this (Haven, p.186) and providing children with specific knowledge facts, in the context of their interests (Terrace, pp.172-173).
- supporting the child's problem-solving and experimentation, with a predetermined outcome or task in the teacher's mind. (Terrace, pp.172-173).

These scaffolding interactions, while useful during the teaching of specific skills and concepts, do not contribute to empowering children in the same way co-constructive interactions do.

7.2.3 Co-constructive Interactions

When co-constructing learning with children, teachers in the four case study centres demonstrated the following interactions:

- **co-constructing meanings.** This included: hearing children; getting to know what the children think, whether or not they were currently a focus of planning (Manuka, p.123, p.143, p.144; Kauri, p.156; Haven, p.186); questioning techniques, with no particular knowledge outcome in the teacher's head (Manuka, pp.123-124; Terrace, p.179; Haven, p.190); aware of their interests; not interrupting them; allowing silences; following children's leads (Manuka, pp.123-124, dialogue, p.126; Terrace, p.179; Haven, p.191); checking the child's meaning (Manuka, p.123, p.135 - dialogue; Terrace, p.179; Haven, pp.186, 188); supporting children in learning from each other (Manuka, p.130; Haven, p.197).
- **making links in thinking across time and activities in relation to children's own ideas.** Demonstrated through: revisiting children's own ideas and interests (Manuka,

pp.119, 120 #1, 125, 130; Kauri, pp. 158, 162; Haven, p.192); making links between many sources of ideas; exploring children's thinking with them (Manuka, p. 131; Kauri, p.163; Haven, pp.187-188)

- **developing full, two-way intersubjectivity with children**. Through: sharing their own ideas with children to extend their current interests (Kauri, p.163; Haven, p.191); entering the child's fantasy play (Haven, p.191); valuing and giving voice to children's cognitive activities (Haven, p.184); respectfully checking that a child would like the offered help (Haven, p.190).

The items of 7.2.3 are included in Figure 7.2 (p.232) as the significant interactions in the personal plane of activity that contribute to the co-construction of understandings between teachers and children and therefore specifically to empowering outcomes for children.

7.3 PROPOSITION TWO, THAT CO-CONSTRUCTING LEARNING WITH CHILDREN REQUIRES TEACHERS TO DEVELOP SUPPORTING PROCESSES THAT VALUE CHILDREN'S VOICES AND TO RESEARCH THE CONTENT KNOWLEDGE OF TOPICS RELATED TO CHILDREN'S INTERESTS

Evidence of this proposition is found in the processes of the institutional/community plane of activity (see Table 7.1, p. 216). At their centre level, teachers in the four case study centres identified the following aspects as important processes contributing to the co-construction of learning in their centres:

7.3.1 **articulated and collaborative planning**, including: collaborative goal-setting (Haven, p. 198); being challenged to articulate their planning processes and the philosophy informing these (Manuka, p.144; Kauri, p. 159; Haven, p.204); reference to written texts, relating ideas from several sources to children's learning, including developing domain-specific knowledge such as that from Technology in the New Zealand Curriculum (Ministry of Education, 1995) (Manuka, p.134; Kauri, p.168; Haven, p.208); collaboration with parents, who also had the opportunity to reflect on the centre's changed processes (Manuka, pp.136, 137; Kauri, p.162; Haven, p. 201), with children (contingent responding)

(Manuka, pp.122, 133; Kauri, p.168, #1, #2; Haven, p.186) *and* with other teachers (Manuka, pp.128, 131; Haven, p.198); planning projects for individual children to facilitate the co-construction of understandings with many children, whether or not they are a focus of the current planning cycle (Manuka, pp.131, 141; Haven, p.189; wine-making, p.196); efficiency of transcribing dialogues, especially for knowing what the children understand and for analysing teacher-child power relationships (Manuka, p.133, Haven, pp.194-195).

7.3.2 **professional development opportunities,** including: commitment to and engagement in reflective dialogue (Manuka, p.148; Kauri, p.165; Haven, p.210); integrating learning from a variety of professional development opportunities (conference attendance, higher education) into centre professional development (Kauri, p.154; Haven, p.208); identifying barriers to the co-constructive process (Manuka, pp.141-143); dissemination of learning with peers in their professional community (Manuka, p.147).

7.3.3 **researching topics of children's interest,** including the use of *Te Whāriki* and sometimes the New Zealand Curriculum Framework curriculum documents), (Manuka, pp.115, 122.; Haven, p.194); extending children's identified schema (Manuka, pp.111, 117; Haven, pp.192, 199); and tracking children's theory of mind (Haven, p.186).

The items of 7.3 are included in Figure 7.2 (p.232) as the significant interactions in the community/institutional plane of activity that contribute to the co-construction of understandings between teachers and children and therefore specifically to the transformation of participation for children.

7.4 OUTCOMES FOR CHILDREN ACROSS THE FOUR CASE STUDY CENTRES

7.4.1 Transformation of participation for children

The expectation of professional development for teachers is that it will result in changes for children. In the early stages of my work with teachers, my inclination was to provide evidence of change for children through supporting teachers in measuring changes in their own interactions with children and tracking changes in the children's

verbalisations as a result. I encouraged teachers in two centres to engage with the work of Bloom (Bloom, Englehart, Furst, Hill & Krathwohl, 1956), on levels of thinking and questioning and with Tough (1976) on levels of conversing with children; in both centres the teachers politely evaded my suggestions, even when I adapted each theorist's work with examples from its own children, for one of the centres (see Appendix D6). To be consistent with sociocultural assessment, I needed to revise my thinking about outcomes for children.

Assessment of outcomes for young children's learning in a sociocultural paradigm needs to reflect the principles of sociocultural theory (Cullen, 1996; Fleer, 2001; Fleer & Richardson, 2002; Rogoff, 1998). These principles include assessment during authentic learning experiences, within the child's zone of proximal development and during shared activity with peers and adults. Assessment is also dynamic, in that it is about observing the interacting child in order for the teachers to have better understandings of how to continue to extend the child, rather than as a means of the child performing for the teacher to show what s/he can do. As such, assessment in a sociocultural paradigm is more about the processes of learning and about the input of the teacher and children to jointly constructed meanings, than about identifying and testing for pre-set and measurable objectives (Cullen, 2001; Fleer, 2001; Fleer & Richardson, 2002). *Te Whāriki* learning outcomes are descriptions of what the adult will do to support children's learning (Cullen, 1996), not prescriptive achievement objectives. Collaborative assessment and planning for children's learning by teachers and parents, with children, was succinctly described by Fleer and Richardson (2002) as collectively mediated assessment.

Since learning in the sociocultural paradigm is about a "transformation of participation" across activity settings, how children's participation across activities is transformed through participation will be the major interest in assessment. Relevant questions are: does the child engage in activity, either alone or with others, with more interest, at greater depth of thinking and complexity, with greater independence, with more collaboration, more decision-making, more consideration, more enjoyment?

As a result of their teachers' skills and supporting processes, in this study children's understandings were co-constructed with them through their being supported in the following identified areas:

- **Responsibility for their own learning** This included: involvement in planning for their own learning (Annabelle, at Manuka, p.121 #5; Terrace, p.180 #1; Haven wine-maker, pp.187-188); being empowered to make decisions and to conduct their own experiments (Manuka, p.122, #5; Terrace, p.181, #1); and involvement in collaborative inquiry with their peers and with their teachers (Manuka, p.128; Kauri, p.159; Terrace, p.181, #1; Haven, pp.197-198).
- **Engagement in more complex thinking** Examples of evidence include: Manuka (p.122, #1-7); Kauri (p.169, #1); Terrace (p.182, #2); Haven, with memory enhancement (p.206).
- **Engagement in authentic learning experiences** through ongoing projects and through being valued (Manuka, p.132; Kauri, p.169, #5; Terrace, p.182, #4; Haven, concrete project, pp.197, 198). Better links were made between their centre and home and better communication with both teachers and parents about topics of their interests, including extending their own and subsequently children's knowledge bases, through subject disciplines and domains such as technology (Manuka, p.129; Kauri, p.169, #2; Haven, butterflies, pp.192-193).

Figure (7.2) represents an interpretation for my research of the transformation of participation for children as the outcome of their teachers' professional development. The institutional (Section 7.3) and the interpersonal (Section 7.2.3) planes are represented as a "whāriki" or mat, demonstrating their ongoing influences (spiral reciprocity) on each other. The personal plane (7.4.4), in this case representing outcomes for children, is depicted as arising from the whāriki or woven webs of the other two planes of activity.

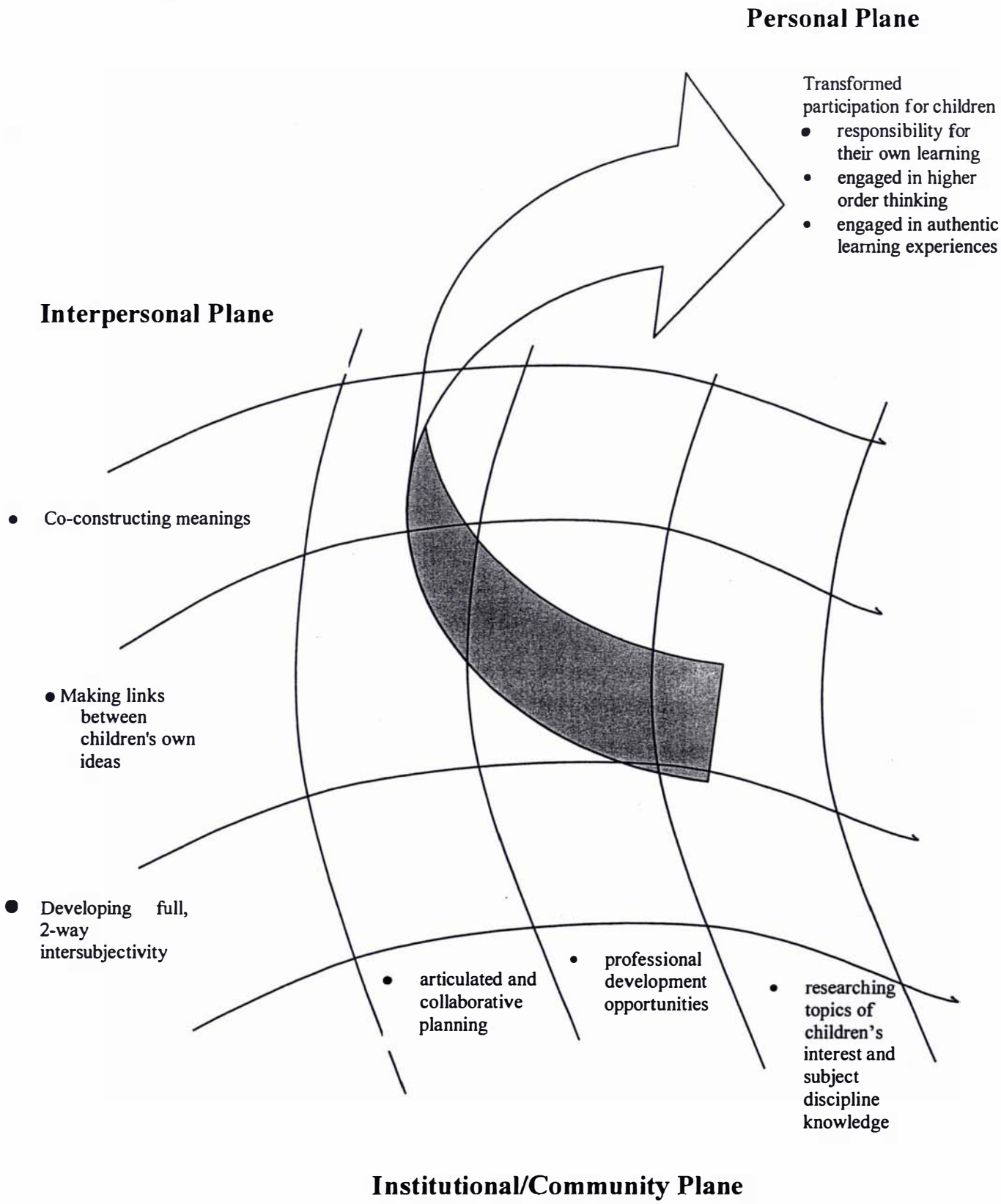


Figure 7.1 Transformation of participation for children as a Whāriki of planes

7.5 PROPOSITION THREE: FACILITATOR-TEACHER CO-CONSTRUCTION OF RESEARCH IS EFFECTIVE PROFESSIONAL DEVELOPMENT; WITH SUCH CRITICAL REFLECTION A CHANGE IN PHILOSOPHY CAN EITHER LEAD OR FOLLOW A CHANGE IN INTERACTIONS WITH CHILDREN

Evidence of this proposition is found in the personal changes for teachers and as outcomes for the children, of the personal plane of activity (see Table 7.1). The questions underpinning proposition three were: What changed for teachers as the result of their collaborative professional development? What did action research identify as the most useful processes in supporting their learning to co-construct with children?

Teachers in this project learned to listen to children's ideas and to value children's voices highly. They reported becoming excited about children's interests and knowing children really well because of their better communication about children's learning with both the children and their parents. Many of the teachers found, as did the one who articulated it, that they had been "talking too much and doing all the thinking" and they worked to change their interactions with children to include "more silences and space for children to think and to respond" (Manuka, p.127). Teachers found that through having a better understanding of children's home activities, they were more readily able to develop shared meaning with children, making better links between home and centre and across all activity settings. Shared understandings amongst these communities of learning and inquiry led to mutual respect and a valuing of other voices by all participants, including children, parents and teachers. Children's expertise came to be valued with pride, if sometimes with surprise and wonder at the depth of understanding demonstrated. This, in turn, led to children being empowered to do more of their own thinking, alongside adults who now supported this, rather than leaving them to their own learning in interacting with the equipment provided. Teachers remained with and returned to topics of children's interest, contingently on their interest levels, so long as the children's interest remained. Trips were organised outside the centre related to the topic of the children's interests, sometimes by the children themselves.

If children are to be able to explore fully topics of their real-life interests, they need opportunities to return to these topics and to engage in ongoing investigations related to them (Katz & Chard, 2000). The teachers used the shared meaning developed in their dialogues with children to develop evolving activities as projects, which encouraged continual return to dialogues on the same topics of interest to the children. Through returning to their topics of interest, groups of children and teachers were able to engage in ever-deeper and wider thinking (Carr, 2001) about these authentic real-life topics and through this, develop their skills of collaborating both with their peers and their adults (Forman, 1996; Forman & Fyfe, 1998). Using such intense and open-ended processes for supporting children's learning has implications for documentation of learning (Helm, Beneke & Steinheimer, 1998) and for planning to ensure all children are included as focus children at some stage of the year.

At the beginning of their programmes of professional development, all four teams of teachers expressed concerns that the planning for individual children could lead to missed opportunities at important (teachable, or unreturnable) moments for other children, and that the efforts involved in such planning needed to be justified in terms of ongoing benefits for the child's learning when s/he was no longer a focus of planning. Teachers also found they needed to research the topics of children's interests to improve their own conceptual understandings in these areas in order to be able to support the children's understandings. Some of this research can be undertaken with the children and it is quite appropriate for the teacher to say, "I don't know, let's find out". However, it is also appropriate for teachers to become more knowledgeable about a wide range of topics, at the adult level, in response to children's interests. No teacher can be an expert in every discipline, though every teaching team needs to be constantly upskilling, and what better inspiration than for immediate application within a specific project related to particular children's interests?

At a practical and organisational level, the teachers needed to be very familiar with the plans and progress for children in each other's whānau/roopu groups. In allocating teacher duties to ensure all areas are adequately supervised, New Zealand teachers are often rostered on "inside duty", "outside duty", "resource teacher", or some variation according to the size of the teaching team. This means that at all stages of the planning system, whether observing, implementing specific plans or evaluating, the activity

relevant to one particular child is likely to be occurring other than where the teacher responsible for it is working. To maintain a coherent, integrated programme, especially one that encourages ongoing projects, all teachers need to be involved in planning and implementation for all the children with whom they interact during the session. While one teacher usually takes a major role in the record keeping and the collaboration with parents of the children in their small (whānau/roopu) group and in research and organisation of special equipment and activities, the planning process needs to ensure the full teaching team contributes at all planning stages to each child's learning. The excitement generated in the team when all the teachers share learning with the children is reward enough for such collaboration; in addition, each teacher's knowledge base is being used and extended, while each child is being understood and extended from a variety of adult perspectives.

In order that teachers have opportunities for collaborative planning, administrative support is necessary. In childcare centres, especially, teachers need to be available at the same time to plan within their teams. This may involve rostering staff for non-contact periods during the day and/or paid meeting times out of session, on a weekly and semester and annual basis. In one of the case study centres (Terrace), professional development was organised following the monthly staff meeting, which were in the evenings at the end of a teaching day, not a time conducive to in-depth reflection and decision-making.

Teachers found answers to their expressed concerns about the possible negative effects of planning for individual children, in their observations of children's work in small groups. For every project teachers in the four centres developed in response to observation of a child's interests and through talking with parents and the children, several other children also became major contributors to the investigations. Peer collaboration was encouraged and often records, including photos and dialogue transcriptions from project work, were included in the portfolios of several children, not only that of the focus child. When planning a project based on one child's specific interests, teachers found several children joined the activities very quickly and pursued the project alongside the focus child. These teachers were then able to maintain the project for the group beyond the cycle of the focus child and successively to include different children as the focus of planning within the continually evolving project.

Manuka teachers struggled initially with their conception of children learning through imitating each other and with this not being seen as "cheating", but rather as a legitimate and valued aspect of learning in sociocultural theory. Vygotsky (1986) himself discussed the need to view imitation as a legitimate skill in learning, as children mediate each other's understandings (see 2.2.1). The very idea of cheating is a school-based concept that is somewhat surprising in the context of early childhood, though all teachers have spent many years in school and tertiary institutions. This concept represents the hold of individualism on teacher's thinking. The discussions for these teachers about children learning through copying each other was symptomatic of this team's conscious change from a Piagetian to a Vygotskian philosophy of learning, as a direct result of their critical thinking about their own practices of interacting with children.

Haven Centre teachers became especially interested in aspects of children's theory of mind (Dockett, 1995; Goncu, 1993, 1999; Moses & Chandler, 1992; Wellman & Gelman, 1992), collecting many dialogues relating to children's understanding of where their brains were, what their brains did and how their brains 'heard'. On several occasions teachers also talked about children's dreams and how they thought. These investigations developed a new respect in these teachers for children's powers of thinking and understanding.

The most significant aspect of the action research for all four teaching teams was their analysis of their own dialogues with children. As the facilitator supporting this process, I was very aware of the group processes that made such critical reflection possible. First, my relationship with each team was important; second and most important, the teachers' relationships within their teams with each other and with their management, was vital, for honest reflection and contemplation of change. In modelling a co-constructive approach to professional development, I took care to maintain honesty and transparency in all my interactions with each team. This was demonstrated clearly with Kauri teachers, with whom I debated the feedback I had received from a peer reviewer on my submission for an article to be published, relating to the teachers' interactions with children in their centre. In this case, our community of inquiry expanded and took on new meanings, as we worked on several planes to come to an understanding of the

issues and as we considered the meanings we could construct from them. As a result of these dialogues between the reviewer (albeit unbeknown to her/him) and the Kauri teachers and me, both the teachers and I developed clearer understandings of the co-constructive model of learning and of the spiral reciprocity between planes of activity.

Analysis of dialogues was the key learning tool in all four action research projects and this was based on the trusting and reciprocal relationships between all of us. I was genuinely not the expert in any situation, since the teachers knew the children in their centres and I did not. I was working to understand what sociocultural theory in the practice of centre interactions might mean, as were the teachers; and none of us had a specific outcome in mind for our action research other than a desire to improve teacher-child interactions in the interests of supporting children's learning. I believe the teachers sometimes viewed me as an expert and wanted to know what I was looking for so they could deliver. This is a legacy of their traditional ways of learning and a reminder that children as well as adults learn from **how** they learn as much from the **what** (the content) of learning.

It takes courage for teachers to engage in joint analysis of their own dialogues with children and one team was unable to achieve this. Each team consisted of a leader, the Head Teacher or Supervisor and from one other teacher (Kauri and Haven), to two (Manuka), to approximately twenty (Terrace). The role of the leader was important, in that if she could submit her dialogue with children to the group for analysis and accept the consequent discussion with an open mind, this could pave the way for her other teacher(s) to do the same. All the teachers I worked with were fully, or very nearly, qualified, with a minimum of a 3-year Diploma of Teaching in Early Childhood Education. At Terrace I worked with only one teacher, other than when we reported our findings to the whole team. Change here was difficult to achieve because the team was so large and too many extraneous concerns prevented Marion and me from gaining any consensus for change for the whole centre. The other three teams, however, demonstrated considerable team spirit and a trust and respect for each other that encouraged open sharing and honest critical reflection on their skills of dialogue with children. Such collaboration would be very difficult to achieve with a group that included teachers without the requisite skills of observing children, maintaining detailed

records, interacting with children and an understanding of their underpinning philosophies of learning (Collins, 1996; Nally, 1995).

The outcomes of the programmes of co-constructed action research in the four case study centres are summarised in the following lists and presented as a diagram representing the three planes of activity in which each item can be seen to have taken place (Figure 7.2). The vertical arrows in Figure 7.2 represent the spiral reciprocity between the planes; items in each plane are not mutually exclusive of items in the other planes, and each item both contributes to and is constituted by items in all three planes.

7.5.1 Outcomes for teachers of co-constructed action research in the personal plane

Teachers involved in this research project reported the following outcomes for themselves. Each of them:

- knew each other better (other than at Terrace)
- knew the children better
- changed their philosophy of learning to a commitment to sociocultural theory, leading to a better understanding of the theory underpinning the philosophy of *Te Whāriki*
- developed skills in hearing the child's voice and in analysing teacher-child dialogue.
- were empowered to engage in research and, for Manuka, dissemination of findings with peers
- explored aspects of theories of learning (sociocultural theory for all four centres; theory of mind for Haven; brain development for Kauri; schema theory, for Manuka and Haven)
- developed knowledge bases in many areas through researching topics of children's interests (Manuka, Kauri and Haven).

The above items constitute the personal plane of Figure 7.2 (p. 232).

7.5.2 Outcomes for teachers of co-constructed action research in the interpersonal plane (achieved differently in each centre and to varying levels)

Teachers across the four case study centres worked to develop many skills and understandings during the process of their research, including:

- interactive skills of collaboration, during sessions and during planning, with children, with each other and with parents (Manuka, Kauri, Haven)
- sharing power, especially with children (Manuka, Kauri, Terrace, Haven)
- working through feelings of exposure (Haven)
- skills of co-construction of action research between researcher and facilitator, at Haven and the teaching team and gained confidence in the process (especially the least qualified teacher at the time, at Kauri)
- learning that all participants are researchers (Manuka, Kauri, Haven)
- using good leadership and good team dynamics (Manuka, Kauri, Haven)
- trusting and reciprocal relationships between teaching teams and researcher, with ongoing attention to issues of ethics (Manuka, Kauri, Haven).

These items constitute the interpersonal plane in Figure 7.2 (p.232).

7.5.3 Outcomes for teachers of co-constructed action research in the community/institutional plane

The following items are examples across the four case study centres that contributed to their professional development programme in the institutional plane for the participating teachers, in their communities of inquiry:

- an article was submitted for scrutiny of peers and published in a journal that is easily accessible to peers (Manuka)
- goal-setting involved community input (Haven goal-setting)
- teachers became committed to critical reflection and action research (making clear links between philosophy and practice in all four centres, though for only one teacher at Terrace)
- planning processes were clearly identified (in all four centres, though only for one teacher at Terrace)
- teachers learned the value of researching topics of children's interests (in all four centres)

- teachers realised learning occurs across time and across institutional boundaries, for teachers and for children (Kauri)
- management and administrative support was provided (differentially in the four centres) in the following ways:
    - employment of qualified teachers (Manuka, Kauri, Terrace, Haven, though Terrace also had many unqualified and part-time teachers)
    - provision for professional development for teachers. All four centres were registered with providers of the Ministry of Education-funded professional development
    - paid time for collaborative planning and administrative support for planning, maintenance of children's profiles and resource development (Manuka, Kauri, Haven)
    - provision of equipment, including technological tools (computers and programmes, cameras, at Manuka, Kauri, Haven).

These items are recorded in the community/institutional plane in Figure 7.2

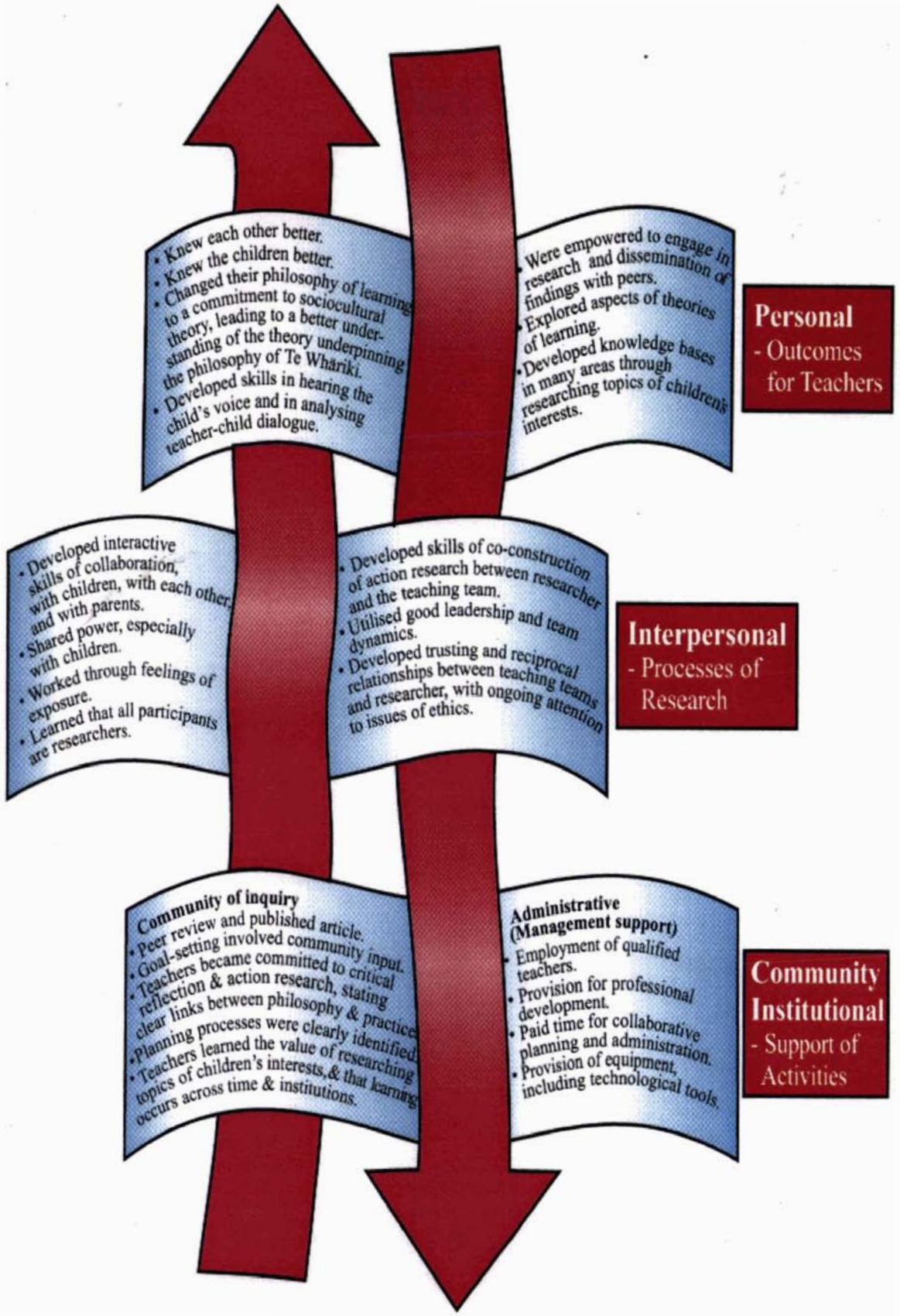


Figure 7.2 Outcomes for teachers as a spiral reciprocity of planes

Together Figures 7.1 and 7.2 summarise the topics addressed in our action research in the four centres. They also demonstrate the holistic nature of our research and the value of foregrounding one aspect of an activity to gain a fuller understanding of it, while remaining aware of backgrounded and interacting aspects of the environment. My study foregrounded teacher-child dialogue as a key set of skills in the interpersonal plane and in developing intersubjectivity and co-constructing learning with children. The teachers' intention to improve their skills of dialogue necessarily led them to analyse both their supporting and planning processes and their philosophies of learning on which these processes were based. In this study some teachers found they did not have clear links between their planning for activities to extend the interests and strengths identified through observations, and their general knowledge of the children and their assessment procedures. Making these links between philosophy and the various aspects of practice explicit was an important aspect of ensuring sociocultural theory was consistently implemented.

Links between the three planes of activity can be made in many ways. One teacher working alone in a centre is not likely to be able to implement and sustain the skills and processes that support co-construction. The implementation of any philosophy of learning requires a whole centre commitment (Collins, 1996; Nally, 1995), including support from management and ultimately, approval from the sector, and from Government that this is an appropriate method to meet the terms of their negotiated charter. Within the centre, children and parents become familiar with the culture and learn to behave as expected, at the same time as they contribute to this culture and themselves change what happens there (Carr, 2000; Moll, 2000; Vygotsky, 1978b; Wenger, 1998). As a university student in one of the centres commented, "Because the children here are used to being able to have in-depth conversations with teachers and research with teachers things that interest them, most of them have good communications skills and they think thoughtfully about things they ask, or information they share". Thus influences and interactions from all levels, from the Government to the centre's management to individual teachers and the team, all contributed to outcomes for children's learning and for each child in this group.

7.5.4 Scaffolding children's learning and co-constructing projects

The inclusion of specific interaction skills under the headings of either scaffolding or intersubjectivity is contentious. In the psychological literature, the definition of scaffolding is based largely on adult-directed methods of working with children (Rogoff, 1998; Stone, 1993). Although the intention of scaffolding is that children take progressively more responsibility for their own learning, this outcome is often achieved in the context of specific outcomes about which the teacher has made prior decisions. Wells (2001) demonstrates the use of scaffolding as a metaphor when he is working with children towards his own agenda, even when this is within an overall sequence of events aimed at co-constructing learning. As discussed earlier in this report (Chapter 2), it was only through attention to the fine details of non-verbal interactions, following critique from his graduate students, that Wells realised how much he was directing the children's thinking. Of particular relevance in my own clarifications of scaffolding and co-construction, is Wells' use of the term scaffolding when describing those interactions with children in which he is attempting to lead their thinking according to his own agenda, compared with his use of the term co-constructing, when he is able to tune in fully to the children's thinking and to support them in investigating these.

There are times when it is appropriate for teachers to scaffold children's achievements and learning, and this is especially so when learning can be seen as the development of microgenetic processes (Van Oers & Wardekker, 1999), of specific skills or knowledge and rote learning. In the current study, the teachers and I found much of what they called scaffolded learning was of the nature of such microgenetic skills. Such skills are often required before children are able to engage in a larger pattern of behaviour, in what Van Oers calls learning as an expansion of an activity (see Section 2.3.3) and what I have equated here with the co-construction of learning.

In contrast to scaffolding, the language of co-construction of learning generally has no prescribed content outcomes (the teacher has no specific direction of the learning in mind); the focus is on developing shared meanings (intersubjectivity) and on each participant contributing to the ongoing learning experiences from their own expertise and points of view. In early childhood programmes, the development of evolving projects is considered an appropriate vehicle for supporting children's process skills of

communicating their ideas, problem solving and higher order logic and meaning-making (Athey, 1990; Fleer, 1995b; Forman, 1996; Hedegaard, 1993; Nutbrown, 1994; McNaughton, 1995; Van Oers, 1997). In such an approach the traditional teaching of discipline knowledge can be interwoven as appropriate. In the resultant integrated curriculum, one of the teacher's roles, as the "senior semiotician" (Vygotsky, 1929), is to ensure these discipline areas are addressed, to support children learning formal concepts to enrich their informal ones. The Reggio Emilia Preschools have contributed much to the concept of an integrated curriculum in early childhood, through the project approach to planning for authentic learning (Edwards, Gandini & Forman, 1994).

In practice, teachers who have access to the full range of skills, move flexibly between using scaffolding and co-constructing interactions. However, the major issue here is the use of power (Lindfors, 1999). If children are to be empowered as equal contributors to learning situations, they need to be in an environment in which they learn they have the power to make decisions about the direction of their learning. Scaffolding, in the original sense, maintains the power and the decisions about what is to be learned with the teacher; co-construction shares the power and direction of learning between all participants. It takes courage for teachers to give children power (Carr, 2000). Genuine power sharing takes place in a community of learners within which this is a deliberately planned outcome (Lindfors, 1999). Outcomes for children are the result of a complex set of actions and decisions about the environment, routines, groupings of children, relationships and interactions with and between the teachers and children, and the nature of activities, equipment and materials provided for learning. Teachers' philosophies of learning underpin all these contributions to the children's learning programme (Leiber et al. 1998).

A between-centre example of ostensibly the same activity demonstrates on all levels the very different outcomes for children's learning of their teachers' planning, which is based on their philosophies of learning. The experiences for children in the making of muffins in two of the case study centres clearly demonstrated differing outcomes for children's learning in two different environments. A transcript of dialogue within the first example, a group experience of making muffins at Terrace Centre, is recorded in Chapter Six (p.172). This activity was only one of many activities within what became an in-depth and ongoing project that grew with the children's and the teacher's

changing interests. The activity developed from observations of two girls who often made mixtures and talked about cooking in the sandpit. The project evolved to include a visit to the supermarket with a few children, to visit the bakery and buy the required ingredients; the group activity of making and eating muffins; writing thank-you letters to the supermarket manager for showing them around her bakery; investigation of the postal system and a visit to the post centre, during which some children saw their own letters to themselves (containing recipes for making muffins) being sorted into their postal areas; discussions and artistic representations of town and rural delivery means and a local walk to view the variety of letter boxes; and the setting up of a junk delivery system on the tricycles in their centre. This project involved almost every child in the centre at some stage.

The second recorded example of muffin making, in Manuka, took place in what has come to be called in New Zealand centres a "process cooking" (see Glossary) set up. Here, children work largely individually to make one item for their own consumption. In this study's recorded example of such an experience of process cooking at Manuka, the focus child had several interactions with teachers and with other children. During their overseeing from a distance in the episode recorded, three of the teachers noticed at different points, especially early in the setting up of the recipe cards, that Terry required help to achieve the correct sequence. Although background noise precluded transcriptions of these teacher-child dialogues, body stance and physical movements clearly indicated their scaffolding of Terry's understanding of how to match the sequences of dots on envelope and cards. It was Terry's hands that moved the cards around in response to the position of his finger following the dots on the envelope. Peer interactions also demonstrate other children's respect of such activity as Terry's, even as they discuss what he is doing and offer supportive remarks.

My interest in comparing these two examples of muffin making is to consider outcomes for children engaged in activity in their environments, in projects and in experiences in centres of interest as the majority of early childhood centres are currently organised. In the group experience at Terrace, it was the teacher who was in control, making the decisions and at every point planning the next move. Throughout the experience, the teacher was consciously scaffolding the children to make links between past and present. At Manuka, the child's activities were co-constructed in the structure of the furniture and the provision of the particular recipes with the necessary equipment and

materials. Here there were fewer teacher-child and child-child interactions. However, within the organised constraints, it was the child who made each decision about pace of working and amounts of ingredients and how much stirring to engage in; he was in charge, empowered to complete the full process and then to eat his product. He knew he could also choose to repeat this cooking experience during future mornings at kindergarten, so long as he placed his name card on the board at the appropriate time. In terms of his transformation in ways of participating, Terry was more fully engaged in the activity than was the group of children at Terrace. Terry demonstrated his greater autonomy through working the full process through, making decisions in collaboration with his teacher and other children who visited his activity, and he enjoyed the processes of making and eating his muffin.

Throughout this study I have advocated the development of ongoing projects with children, in the interests of engaging them in authentic activity, socially constructed learning and higher order thinking skills such as problem solving, planning ahead, decision-making and meaning-making. However, as the above examples indicate, a project does not necessarily empower children in co-constructive interactions, as can be seen in the Terrace children's experiences, of which their muffin making was one activity. Further, co-construction of learning can take place in activities of short duration, as in the example of process cooking with Terry and certainly also in the frequent and common spontaneous exchanges between teachers and children that take place in any quality early childhood centre. At another centre (Haven) the children transformed their skills and knowledge of their process cooking from muffins both to free baking (with no recipe) and to writing a recipe for concrete making. In both cases these children were encouraged to experiment with quantities, to evaluate the outcomes of the product and to continue experimenting until the product was satisfactory to the children themselves.

Children engaged in project work may or may not be involved in co-constructive learning and empowered to make decisions in the process. As a corollary, children involved in a set activity or spontaneous discussion likewise may or may not be empowered through engagement in co-constructive thinking and activity. The crucial factors that contribute to co-constructed understandings are teacher-child interactions that have been identified throughout this research as empowering children, and these

interactions are the outcomes of underpinning philosophies and beliefs about children's learning.

In sociocultural theory, the major purpose of education is for children to learn to appropriate the tools of their culture (Vygotsky, 1926), as discussed in Section 2.2. These tools include ways of thinking and understanding the world and in so doing, ways of interacting with other people. It is the children's internalisation of ways of interacting with others as much as the content or topic they are investigating that contributes to their learning processes (Moll, 1990, 2000; Vygotsky, 1978a,b). Vygotsky proposed that children use the same means of problem-solving to guide their own behaviour as they learned to use in interactions with others (Putney, Green, Dixon, Duran & Yeager, 2000). In studying children's learning it is important to attend to the development of group (the collective) interactions as well as to individual outcomes, and equally important that teachers model their preferred ways of interacting as a method to support children interacting with each other in similar ways. Learning is also viewed as taking place across time, as community practices shape and are shaped by individual members. This study has been an investigation into how teachers in four early childhood centres helped the children in their centres to appropriate the tools of their culture and how their centre cultures supported this appropriation.

7.6 SUMMARY

In this chapter outcomes of the co-constructed, action research programme for adults and for children have been identified in three planes of activity and in examples of the spiral reciprocity between these planes. Through working co-constructively with teachers in four centres, the clusters of skills and processes these teachers demonstrated have been identified as contributing to empowering children as learners. The process of changing my focus from that of scaffolding children's learning to co-constructing learning with them, developed progressively during my reflection with the teachers on their recorded philosophies and practices. The notion of interacting planes of activity has encouraged the analysis of these clusters of skills and processes within the larger picture of the history and culture of each centre. Also contributing to activity in these planes are the current tools of the culture, such as planning processes and centre routines, as these were used by the teachers and parents and within the research itself.

Each of the two models (Figures 7.1 and 7.2) developed to support teacher understanding and to summarise the research demonstrate the necessity of attending to the overall environment, when seeking to improve outcomes for children. Constituent skills and processes were addressed variously by each teacher; however, the foregrounding of these specifics was not allowed to lead to ignoring those aspects that were at that time in the background. The achievement of lasting change for these teaching teams required collaboration with all parties concerned, full support of the teaching team and attention to all three planes of interaction. Where these requirements were not met, lasting change was not achieved, as happened for one centre.

CHAPTER 8

FROM SCAFFOLDING *FOR* TO CO-CONSTRUCTION *WITH* CHILDREN AND ADULTS

8.1 INTRODUCTION

The teachers in four case study centres worked in a co-constructive model of professional development to identify and improve aspects of their best practices in interacting with children. The dual focus of this study was the professional development of teachers and their practices of planning for and empowering children through having their voices heard. Utilising the activity of dialogue, between teachers and children and between teachers and their facilitator of professional development, as the major tool of analysis, ensured that a sociocultural perspective was maintained. An outcome of teachers' analyses of their interactions with children was a distinction between scaffolding of learning for children and the co-construction of understandings with them. This chapter summarises the contribution of the report to the support of teachers in implementing sociocultural theory in early childhood centres and to professional development and research, it identifies some limitations of the study and it makes recommendations for future early childhood practice, professional development and research.

8.2 CLARIFICATION OF SCAFFOLDING AND CO-CONSTRUCTION IN LITERATURE IN CONTEXT OF ACTION RESEARCH

The study has identified some key interactions and processes operating in four centres that contributed to their best practices in scaffolding children's learning and co-constructing learning with them, through examples selected by the teachers themselves. The guiding methodology was facilitated and collaborative action research during which professional development was co-constructed with each of four centres, in progressively focusing case studies. Propositions based on experiences in co-constructing professional development with centre teams were grounded in the practical life of these four centres and they guided the selection of theory and research in support of the teachers'

development. My own thinking throughout this project has been shaped and reshaped as I have read, debated, written and been critiqued, with and by my colleagues and peers from many nations but especially from throughout New Zealand, and especially through my work with the case study teachers and families.

Sociocultural theory has been the basis for understanding of the ways in which children's thinking and learning is best supported. This theory is a very broad paradigm that does not yet appear to have developed central sets of teacher behaviours in the early childhood setting, as the developmental paradigm and Piagetianism have in the last several decades. It seems that a critical mass of practitioners in early childhood with a clear understanding of how to translate sociocultural theory into generally accepted practice has yet to emerge in New Zealand early childhood centres. *Te Whāriki,* which has been influential in early childhood centres since its first draft (Ministry of Education, 1993), has a strongly sociocultural foundation that needs to be understood by practitioners if the advocated outcomes for children are to be achieved. The widely discrepant set of versions of sociocultural theory in operation discussed earlier in this report (Chapter Two) is not supportive of teachers' clear articulation and appropriate implementation of *Te Whāriki.* One example of such discrepancy addressed is the definition of scaffolding learning by some researchers as the most appropriate way of implementing sociocultural theory in practice (Berk & Winsler, 1995; MacNaughton & Williams, 1998; Tharpe & Gallimore, 1988), while others believe scaffolding should not be used "in the same breath" (Rogoff, 1998, p.698) as the development of intersubjectivity, which is central to the zone of proximal development and therefore also to sociocultural theory (Stone, 1993). In this respect, reference has been made to levels of power in such interactions (Carr, 2000) and to the contingency of adults' responses to children's utterances (Wood & Middleton, 1975). Certainly the use of power and of contingent responses are important ingredients in maintaining two-way intersubjectivity during teacher-child dialogues.

Teachers exhibit many types of interactions with children, often expressed on a continuum. Helm and Katz (2001) developed a continuum that ranges from single concept learning to co-construction of understandings through research in projects; the continuum has six categories, five of which are teacher-directed or controlled.

Bredekamp and Rosegrant's (1995) continuum ranges from non-directive to directive with a fine-grained analysis and eight categories of interaction types.

TEACHING CONTINUUM							
NON-DIRECTIVE			MEDIATING			DIRECTIVE	
Acknowledge	Model	Facilitate	Support	Scaffold	Co-construct	Demonstrate	Direct

(p.21)

Figure 8.1 Teaching Continuum

On the basis of analysis of teacher-child interactions in this study I question Bredekamp and Rosegrant's (1995) placing of co-constructive interactions closer than scaffolding to the teacher-directive end of their scale; I would place scaffolding in this position, with co-constructive interactions on the non-directive, mediating side of scaffolding. Gardner (1996) also questioned items on the continuum, redefining the contents of Bredekamp and Rosegrant's scaffolding item to include only the mediating aspects under the term "scaffolding", with the teacher-directed aspects included in a new item, called "structure". Gardner's argument supports my findings with teachers, that the commonly understood concept of scaffolding is that it can be quite directive. My response to Bredekamp and Rosegrant's continuum as a result of research with teacher-child interactions, differs from Gardner's. I recommend maintaining the directive aspects of contingent teaching under the "scaffolding" term and clarifying "co-construction" within the sociocultural paradigm for teacher-child interactions that exhibit equality of power and ongoing intersubjectivity within authentic learning experiences. Co-construction in this definition is more mediating and scaffolding is more directing, on the teaching continuum (Figure 8.2, derived from Bredekamp & Rosegrant, 1995.).

TEACHING CONTINUUM							
NON-DIRECTIVE			MEDIATING			DIRECTIVE	
Acknowledge	Model	Facilitate	Support	Co-construct	Scaffold	Demonstrate	Direct

Figure 8.2 Modified Teaching Continuum

While all types of teacher-child interaction on the continuum are relevant and appropriate at different times and for differing purposes, interest in this study was in a

teacher's ability to operate at the most child-empowering level of co-constructed decision-making, when this is appropriate. If a teacher does not have the interactive skills to engage with children's understandings, or is unaware of the value to children's learning in doing so, then s/he is unlikely to be empowering children. It is during the child-empowering types of teacher-child interactions that differences between scaffolding and co-constructing learning become important. These differences emerged in the course of work with the teachers in the four case study centres.

8.2.1 From scaffolding learning *for* children to co-constructing understandings *with* them, in teachers' practices

When a teacher was working with children to achieve a particular outcome, such as specific understandings or pieces of knowledge, the scaffolding metaphor was appropriate. Several examples of this occurred at Terrace during the group muffin-makings session (p.172). In this case, the power and control of the direction and topic of conversation remained with the teacher, whose interactions were directive and didactic. The teacher's role was then to discover the children's current understanding so she could guide and build on this, to meet the required outcome. Some intersubjectivity was developed, through the teacher discovering what the children understood and this information was used by the teacher in her quest to have the children understand her meaning. However, this was a limited sense of intersubjectivity on the topic, since the adult so controlled the direction of discussion she did not hear what the children understood about the different aspects of the topic. With the teacher so keen for the children to understand where flour comes from, she did not follow up on children's ideas about bees pollinating flowers; when she wanted the children to know the "right" colour (orange) for the egg yolk, she was unable to respond to the creative description of the yolk as "the rusty bit in there" (p.173). The skills used in working with the children demonstrated in this model included: maintaining relationships between the teacher and the children; listening to what the child said and responding contingently to her own agenda; having a clear plan for the activity and supporting the children in completing this plan; and developing sets of activities related to the topic to extend the children's understanding about the topic. Aside from helping the children to come to know or understand the pre-decided learning outcomes, the teacher did not necessarily

add any of her own thoughts or experiences to the dialogue and this is one form of maintaining control and power (Lindfors, 1999).

When a teacher was working within a co-constructive model she was likely to have no specific outcome in mind, other than that together she and the children identified their topics of interest and built on these through mutually interactive dialogue. Examples of activities that developed in this climate were the garden project at Manuka, the sea and diving project at Kauri and the concrete and wine projects at Haven. In these climates children were empowered with their own agency to decide the direction and content of further investigation, on topics of their own interests. This did not abdicate the teacher from responsibility to support the process. The teacher's role was as a facilitator and co-learner, supporting the children's directions of investigation, organising sets of related experiences and whenever possible, the development of a project, through which groups of children were challenged to push their barriers of understanding continually. The teacher contributed her own thinking and described her own related experiences, in the interests of authentic co-learning. Outcomes for children in this paradigm included their responsibility for their own learning and awareness that their teachers were interested in learning with them about those real-life topics that interested them.

8.2.2 From scaffolding learning for teachers, to co-constructing understanding with them, in professional development

During the processes of working with the four case study teams of teachers, I learned to value the differences between co-constructing research with them, in contrast to scaffolding learning for them. Interested in levels of thinking, I attempted to engage teachers in Tough's (1976) levels of questioning so they could analyse their dialogues with children, with a view to increasing the complexity of the questions they asked of children. My ideas here "fell like a lead balloon" (Manuka teachers). I attempted to introduce the same material at Kauri and although these teachers were interested in my use of their own material in tough's categories, they did not use the charts or levels I developed (Appendix D6) in their observations. With Tough's work rejected, I tried again with Bloom's taxonomy, or levels of cognitive thinking and interactions (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). However, neither centre was even vaguely interested in exploring my ideas, when they were about levels. When I had a specific

outcome in my mind, or wanted them to focus on my predetermined interest, as so often happens when adults are scaffolding learning for children, the teachers were not interested in pursuing it.

The outcome was quite different when I was able to stay with the aspects of the teachers' own interests in identifying how they were dialoguing with children. Analysing transcripts of their own interactions with children was authentic for the teachers. Readings that emphasised the interactions between them and the children, such as Hendrick (1997) were especially appreciated by the Manuka teachers, and one of the teachers at Kauri found Shore (1997) to be relevant to her understanding children's thinking. My influence on teachers' thinking thus needed to be in tune with their thinking and their interests if I was to be able to move them forward.

I found my own language about my work with teachers changed, depending on whether I was writing within a scaffolding or a co-constructive paradigm. In discussing links between the teachers' work in our programme of professional development and their work with children, I wrote in 1997,

> *In a sense, facilitated action research has similarities with the scaffolding of children's learning, in that the facilitator maintains support for the centre personnel as they institute their change processes, gradually relinquishing responsibility to the team, as it is able to cope with this.*

Note the power-over language when I wrote this paragraph within the scaffolding paradigm. Uncomfortable that this sentence did not express the way in which I facilitate professional development, later in 1997 I rewrote it within the co-constructive paradigm,

> *In a sense, facilitated action research is co-constructed research, in that the facilitator and teachers together negotiate their processes and pace of change. At times the teachers will take a greater leadership role and at other times the facilitator needs to contribute more.*

I worked more effectively with the teachers in this research when I co-constructed with them than when I attempted to scaffold their learning, such as by addressing Bloom's taxonomy and Tough's levels of thinking with them when they were uninterested in these.

At the start of our action research the four case study centre teams were each in a different place in their ability to co-construct learning with their children, and within their community of learners. Manuka teachers were identifying children's interests and strengths and did hear what they were saying about these. No understanding of theory alone will give teachers the support they need to implement changes in the ways they work with children that are consistent with the intended outcomes of the theory. This team had addressed schema theory (Athey, 1990; Meade, 1995; Nutbrown, 1994) in detail in previous programmes of professional development and yet this had not resulted in their being able to use what they heard children saying, in their planning to extend their thinking. They thought they were extending children through providing them with extra equipment and materials related to their current schema and interests. However, "schema" seemed to have become a label that could be attached to a set of observations. While the label and the observations provided further communications between teachers and the parents, and inspiration for the provision of additional equipment, the next step needed to be taken for the extension of children's thinking to occur at the level of ideas. This team was reluctant to intervene in the children's play for fear of "invading their privacy", viewing such intervention as not supportive of the children's learning, because they subscribed to a developmental, or non-mediated theory of allowing the children to learn through concrete materials at their own pace. These teachers required a successful experience of working with children using appropriate intervention strategies, to be convinced of the value of teachers and children co-constructing learning together.

During the programme of action research in Manuka, several tools were used to support the teachers in making this shift. These tools included teachers' analyses of their own dialogues with children and encouraging them to read and understand relevant research and theory, the application of these in their practices, and their sharing of their learning with their peers in workshops and in publication. This team of teachers was able to use appropriate interaction skills with children to move from too little sharing of their own knowledge with the children, to both listening and contributing their own ideas, within

the model of scaffolding learning. Here, the teachers' philosophy of children's learning was modified as they articulated it and then deliberately set out to change their practices to match their new philosophy. Co-construction was a useful concept in the description of these teachers' new interactions with children. Manuka teachers were not inspired to distinguish between co-construction and scaffolding interactions because they demonstrated many of the interactive skills that are included in the generic understanding of scaffolding, as discussed in Section 5.4.

At Kauri Centre the teachers themselves were questioning the differences between scaffolding learning and co-constructing it, because one of them had learned about sociocultural theory through her studies. The teachers here were likely to have knowledge outcomes for the children's learning in mind in their daily interactions with children. Their challenge to examine their practices came both from me and from an honest appraisal of feedback from an outside reviewer of one of their dialogues, in a paper I had written for publication based on one of their planning cycles. They were also challenged to meet standards in planning and recording as directed by ERO, about which they were quite unclear and they were concerned that our work together be supportive of this. At this centre, the notion of a community of learners was well demonstrated, as collaborative learning for all of us took place within and between the three planes of interaction (Rogoff, 1998), the personal (for children and adults), the interpersonal, and the institutional. Here, the teachers were convinced by their examination of their practices of dialoguing with children to make a shift in their thinking and philosophy.

With ideas of some different, though overlapping, skills that emerged when I considered either the scaffolding or the co-constructive model, I started action research with the third centre. At this point I had two options for supporting teachers in their intention to interact in a variety of ways to extend children's learning. The first option was to extend the scaffolding metaphor to include the interactions that had been identified in the psychological literature as most relevant in the co-construction of learning. This option is taken in well-known texts written for the early childhood field (Berk & Winsler, 1995; Dockett & Fleer, 1999; MacNaughton & Williams, 1998). The second option was to attempt to clarify differences between the two metaphors (Rogoff, 1998), in terms of their translation into interactional practices between teachers and young children. I was

unclear as to which option would be the most supportive for teachers and I sought to clarify this with the next team with whom I was to work.

At Terrace Centre the situation was very different from the other three centres. Only one of the three teachers who began the action research with me continued to any sense of completion. The full team consisted of approximately 20, including many casual and untrained staff, with a group of 40 children catered for in full day care. The one teacher I worked with invited me to video-record her planned session of muffin-making and it was through the analysis of the transcribed dialogue of this session that we were both able to move forward in our understandings of scaffolding and co-constructing learning with children. In my struggle to demonstrate with this teacher different ways of interacting with children, I developed a model of intersubjectivity (Figure 6.1, p.177). The development and maintenance of intersubjectivity is central to teacher-child dialogues and to the development of activities and projects, since it represents the sharing of power between teachers and children. The model proved a useful general tool to help teachers acknowledge the ways in which they were interacting with children as evidenced in their dialogues, as well as a tool that allowed them to identify for themselves the areas they might choose to change. The teacher in this centre made immediate changes in an activity she had devised for a group of children, to extend their ideas of maps and directions between their centre and their homes; as a result she also changed her focus of interactions with these children (see 6.3, p.179). This was an obvious shift from scaffolding the children's learning, with a set outcome in mind, to co-constructing learning with them as they together developed drawings and open-ended discussions about landmarks, directions and distances. Any such changes were short-lived in this centre, because of the difficulty of one teacher working in isolation from her team. With little collaboration in planned change, such change is unlikely to be sustained and our attempts to involve the team were met with resistance, through what Wagner (1999) would describe as a reification of current practices.

Haven Centre teachers demonstrated commitment to collaborative learning in every plane. Most noticeable here was the teachers' utmost respect for children as powerful learners, operating in the individual plane. This respect translated into the teachers' willingness to encourage the children to investigate and experiment with ideas, with recipes and cooking without recipes, in extending recipes to mixing concrete and in

following through with children's interests for months and years if they maintained their motivation in the same areas. The teachers were interested in children's "theories of mind" (Dockett, 1995; Goncu, 1993; Moses & Chandler, 1992; Wellman & Gelman, 1992) and, working in the interpersonal plane, followed through in many dialogues with each other and with the children about where they thought their thinking came from. Included in this community of learning (Palinscar, Brown & Campione, 1993), in the community/institutional plane, and inquiry (Lindfors, 1999; Wells, 1995) were the parents, their community, and a valuing of their ERO report as something the teachers had proactively contributed to. Haven teachers were very willing to critique new ideas from their research programme and attendance at national seminars, and to consider change in their practices.

The Haven team had at its disposal a wide range of interactive skills on which they drew as appropriate for the occasion, in their "community of practice" (Rogoff, 1995; Wenger, 1998). At times children's learning was scaffolded and frequently they also co-constructed learning together. These teachers were skilled in supporting children as they learned from and with each other and in making links between their homes and the centre. The "wine maker" (see dialogue in 6.4) was able to direct the transition of the whole centre into a winery, involving all the children present in making "wine" on several occasions over a 2-year period. The same boy was instrumental in the organisation of an excursion for the centre to his parents' winery, providing his own very clear directions of how to get there and what everyone would need to wear. Through their comprehensive observation, planning and collaborative processes, the teachers ensured every child attending their centre was equally empowered to pursue their own learning strengths. These teachers reinforced their philosophies and practices of co-constructing learning within their community of learners, and evidence of this was seen in their comprehensive and well-maintained portfolios on each child's work at the centre (Helm, Beneke & Steinheimer, 1998).

During our investigations of their scaffolding techniques, the teachers and I in three of the four centres (Kauri, Terrace, Haven) came to view the scaffolding metaphor as a limiting one when applied to encouraging the use of a full repertoire of teachers' interaction skills. Replacement of the scaffolding with the co-constructive metaphor led intuitively to an expectation of a more equal input to dialogue from both the children

and the teacher, when exploring topics of children's interest, than eventuated under the scaffolding model. One of the key skills of co-construction identified was the development of intersubjectivity between a teacher and child(ren) during their dialogues. The maintenance of intersubjectivity was central to the development of evolving projects during which groups of children and teachers were engaged in authentic experiences that empowered all participants to extend their understanding and their skills of working collaboratively.

8.3 OUTCOMES OF A CO-CONSTRUCTIVE LEARNING ENVIRONMENT FOR CHILDREN

As argued by Vygotsky (1978) Wertsch (1981) and others (Putney, Green, Dixon, Duran & Yeager, 2000), the means of social interaction is as important for children's learning as is the topic under investigation. Children working in a co-constructive environment learn they have power to make decisions, their expertise is valued and the outcomes of their efforts are not pre-determined. Objectives for their learning are their empowerment to be involved in decision-making and their learning how to learn. In comparison, children working in an environment in which the ultimate interactions between teacher and children are aimed at specific outcomes are engaged in quite different learning opportunities. Success in such an environment is achieved through being able to ascertain what it is that the teacher wants them to learn or produce and to provide the "right answer" or product. As discussed in Chapter Two, these children are learning to conform and to be dependent on the teacher to organise their learning and their behaviour. Stipek, Feiler, Daniels and Milburn (1995) identified quite different outcomes for children from either a skills- and concept-based programme or a child-empowering one. Van Oers and Wardekker (1999) refer to similar differences in outcomes for children from programmes that they describe as having a focus on either "microgenetic processes" or "expansion of an activity" (pp.231-232; see Section 2.3 this report). From a dispositional perspective, Carr (1997, 2001), Katz (1993) and Smiley and Dweck (1994) have researched and discussed differences for mastery-oriented versus achievement-oriented children and the roles of their teachers in the development of these dispositions.

Evidence for the value in empowering children is strong, as is the need for teachers to learn how to do this. The development of a "community of learners", in which all participants are familiar with a culture of inquiry and shared power, does not happen overnight and does require a commitment from the whole team, addressing the personal, the interpersonal and the community planes of activity, as identified in this report. The following sections describe the outcomes for the community of learners that constituted the research and was to some extent constituted by it. As discussed in Section 7.4, a community of learners owes its existence to a multitude of interacting influences from many planes of activity, of which the personal, the interpersonal and the institutional have been successively foregrounded in this report.

Outcomes for the teachers, children and parents of a commitment to a co-constructive programme of learning are numerous. In sociocultural theory outcomes of learning and teaching need to be what Wells (2000) expressed as both "aimed for and emergent" (p.61) and what Rogoff (1998) called a "transformation of participation across activity settings" (p.690). Learning in this paradigm is not simply the acquisition of isolated facts and bits of knowledge; learning involves the whole person, contributing to personal identity (Wells, 2000). Activities engaged in are situated in time and space, so that although there may be similarities between activities, each evolves with different groups of people with different understandings from any previous interactions. During activities, each individual both changes the activity and is changed by it. Learning takes place in collaborative communities, where groups of people work towards shared goals through joint activity. Activities engaged in need to be authentic, by which is meant having real meaning for the participants, whose participation in this activity transforms their engagement in future activity. Authentic activities take place in the early childhood setting where children are able to "re-present" (Moll, 2000, p.261) meaningful activities from their home and community lives with their peers at the centre.

While the teachers, parents and facilitators engaged in this action research project have identified the changes that have taken place for them over the course of the research, to claim that the learning for the children has changed is a complex issue. Because the children's profiles now generally include transcripts of their dialogues with other children and with their teachers, it is tempting to say that here is evidence they are learning more. However, it could also be simply that their adults are now more aware of

just how much the children are learning and this has not previously been recorded. Cyril may well have known as much about winemaking as his parents and his teachers at Haven discovered, without them knowing he knew. However, without their finding out about his interest and his knowledge, they would have been unable to co-construct learning with him. Cyril's roles as a leader were transformed and his mother reported further "transformation in participation" in his discussions of the sequences involved in winemaking, in which he had not previously engaged.

Examples abound in the data of children's appropriation of their cultural tools through participation in activities at their centres. These outcomes were identified in Figure 7.1 as children being responsible for their own learning and engaged in higher order thinking through authentic learning experiences. The reflection here discusses examples of children's transformation of participation as outcomes of their being empowered as learners, in a co-constructive environment. True to principles of sociocultural assessment, these outcomes are identified within the authentic activities in which the children are engaged, while providing evidence of outcomes of their transformation of participation (Rogoff, 1998) for individual children.

Teachers in this research report the activities they planned with the children were more often of real interest to the children for whom they were planned than they had been after previous planning. Children joined in activities planned with them more often and they discussed plans, made predictions and were proud of their accomplishments. Such involvement is an outcome of children's engagement in authentic activities based on their own real-life interests. As examples, Terrace children role-played van deliveries as an outcome of their visit to the mail centre within their project, and Haven children visited a winery on the invitation and explicit organisation of one of their children. Children had many opportunities to employ their new understandings in different activity settings. The teachers said they knew the children better than previously, because they had tuned into their thinking and into their communities of learners, notably their family lives. As teachers at Haven said about their planning for the extension of specific children, "we are hitting the nail on the head more often now. The children we plan with are engaging in the activities we introduce with real enthusiasm".

value this aspect of peer learning through their understanding of learning in a sociocultural paradigm. As a result these teachers became more involved in supporting children's collaborative inquiry with their peers.

Recorded dialogues in all four centres became wider, deeper, more complex in scope and more coherent (Carr, 2001) as teachers became skilled in listening and responding with children (see especially Manuka, p.126). Children and teachers made many opportunities to engage in the co-construction of beginning scientific concepts (Vygotsky, 1978a) and were therefore more likely to use more advanced thinking skills. During the process of the professional development research, Haven teachers provided a striking example of such development of a child's thinking, in their pre-professional development record of a girl's artistic representation of a butterfly at the beginning of her talking about butterflies and again following a project of many experiences of making and observing butterflies. Her first drawings showed an undifferentiated head-body with one set of wings and six legs attached; her later drawings detailed head, body and thorax, with divided sets of wings, legs attached to the body and accurately represented head and mouth parts.

The children involved in co-constructive opportunities had considerable influence on each other and on their centre, as predicted in the dialogic nature of a community of learners. Manuka teachers revised their attitudes of children "cheating" and the children at Terrace not only attended to their own representations of routes between centre and home but also their peers' representations. Haven children's enthusiasm about concrete and wine resulted in many sessions of production as well as in expeditions and explorations. Teachers and children made better links between home and centre, including and often because of the involvement of their parents in their projects. Kauri's use of photographs of children's activities enabled a parent to correct the teachers' interpretations of his daughter's "playing dead". At Manuka, several parents became much more involved in helping at the kindergarten on the teachers' request and supported children in accessing the computer to extend their project work.

The richness of interactions between teachers and children across time and activity settings is complex to record. An example of the difficulties involved in describing ongoing co-construction of learning was encountered at Kauri centre. Here, peer review

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The richness of interactions between teachers and children across time and activity settings is complex to record. An example of the difficulties involved in describing ongoing co-construction of learning was encountered at Kauri centre. Here, peer review of my article submitted for publication became a learning tool for the teachers and me (Section 6.2), reinforcing for us that accurate analysis of teacher-child interactions requires a rich description of many interactions.

8.4 CONTRIBUTION OF RESEARCH TO THE IMPLEMENTATION OF SOCIOCULTURAL THEORY

The research has contributed an understanding of some of the potential of sociocultural theory for supporting learning, in the three fields of teachers interacting with children, professional development with early childhood teachers and in research methodology.

8.4.1 Contributions to the support of teachers implementing sociocultural principles in their interactions with children

In support of the implementation of sociocultural theory, tools, skills and processes were developed, including:

a) A model of intersubjectivity (Figure 6.3) that provides teachers with a metaphorical positioning of the participants in dialogue. Here is a tool that supports teachers in analysing their philosophies and their practices of interacting with children. Many aspects contribute to the levels of intersubjectivity developed, of which two are the relative power and agency afforded by and to each and the contingent responses of adults and children to each other's contributions.

b) The identification of skills and processes (Figure 7.2) that teachers and centres need to have in place if they are to co-construct understandings with children.

8.4.2 Contributions to the field of professional development

Working within the sociocultural paradigm provided several insights in the processes of professional development:

a) The relating of types of professional development to the three planes of sociocultural activity, the personal, the interpersonal and the institutional (Section 3.1). Teachers engage in a variety of professional development opportunities, all of which contribute to their thinking and potentially to their changing practices. There is value for teachers and their facilitators of professional development in holding both an overview of the team's development and an understanding of the more specific work of individual teachers. The model of planes of activity can support teachers in integrating ideas from their smorgasbords of activities, both individually and collectively in their team. Manuka, Kauri and Haven teachers all integrated learning from their various professional development activities within their programmes of action research.

b) The equating of action research with adults' co-construction of understandings (Section 3.4; Table 3.1, p.72). This relationship provides a model for facilitators to demonstrate in their action research with teachers the skills and processes the teachers will subsequently use with children. In sociocultural terminology, teachers' co-construction of their own understandings with each other can lead to a transformation of their participation with children. The model is also a reminder to facilitators of professional development they have as much to learn from teachers, as teachers have to learn from them. The research supports the findings of Jasman, Payne and Grundy (1999) that university teacher educators have as much to learn from teachers as teachers learn from them.

c) Analysis of the outcomes of action research for the teachers in the three planes of activity, the personal, the interpersonal and the institutional (Figure 7.1). Here is a further demonstration of the inherent value of the model of three planes in ensuring each plane is considered in any analysis. A focus on each plane successively, both during the process of the research and in analysis, is a tool for identification, valuing and support for change, of all aspects that contribute to a centre's work with children.

8.4.3 Contributions to research methodology

The central methodology of the project was co-constructed action research. While action research is by definition collaborative, the utilisation of a facilitator added complexity to this collaboration. That the facilitator was also a university lecturer with perceived expertise in the early childhood sector and in the implementation of sociocultural theory, required ongoing efforts in empowering all participants in decision-making.

There were many links between the research methodology and sociocultural theory:

a) Equating action research with professional development, which was especially important when arguing the case for conducting research **with** colleagues in favour of conducting research **on** others. The act of inquiry is itself an intervention, emphasising the mutuality of learning for both facilitator and teachers, in contrast to the different power relations of a university researcher with "subjects" of research. Research is valid when there is a direct relationship with the daily practices of the teachers, as is the case when the researchers are involved in their own professional development.

b) Attention to each plane of activity, the personal, the interpersonal and the institutional was valuable in both guiding and in tracking the focus of teachers involved in action research. None of the planes exist in isolation from each other and continually making links between them supported understanding of the interdependence of historical, political, social and personal influences within the local contexts and culture of each centre. Outcomes for children of their early childhood programme are products of the interactions of activities in all planes. Attending to each plane and to interactions between them encouraged teachers to act on the "*possibilities* represented in the funds of knowledge found in the community" (italics in original), (Moll, 2000, p.259).

c) Describing ethical checkpoints in the three planes of analysis (3.6) ensures a full coverage of ethical issues, for individual participants, for potential effects of the research on relationships and for wider audiences including rights and relationships between institutions, that robust ethical procedures are designed to protect.

8.5 REFLECTION ON THE METHODOLOGY OF THE RESEARCH, IN THREE PLANES

The essence of Vygotsky has been described by Scribner (1990) as:

> Vygotsky's special genius was in grasping the significance of the social in things as well as people. The world in which we live is humanised, full of material and symbolic objects (signs, knowledge systems) that are culturally constructed, historical in origin and social in context. Since all human beings, including acts of thought, involve the mediation of such objects ("tools" and "signs") they are, on this score alone, social in essence. This is the case whether acts are initiated by single agents or a collective and whether they are performed individually or with others (p.92).

Human understandings are mediated in the culture in which they live, through interactions with others and through the use of the tools of their culture, including language, symbols and cultural artifacts (Moll, 2000). Ideas and efforts in research are mediated by current theories and by the researcher's experiences. The application of theoretical understandings to teachers' practices in this project was mediated by the structure of action research and by current understandings of professional development, especially in the early childhood sector. As children have been found to learn as much from the processes of their learning as from the contents, so do teachers. Addressing each of the personal, the interpersonal and the institutional planes in terms of the programme of action research provided a valuable tool of analysis. Outcomes of an early childhood programme are the results of attention to the three planes of activity, the community/institutional, the interpersonal and the personal. Rogoff's (1998) description of these planes and the questions she posed for each of them, have been addressed.

8.5.1 Personal

As the researcher/facilitator and a university lecturer, I had as much to gain from the action research in each team as did the teachers and children. All participants were empowered through the choice of the research methodology, as each engaged with others in the cultural tool of educational research, as is indicated in Figure 7.2.

The transformation of participation for children involved them in greater responsibility in their own learning and engagement in higher order thinking and teachers gained a better understanding of sociocultural theory and of the underpinnings of *Te Whāriki*. Teachers also developed important personal skills in hearing the child's voice through analysing their teacher-child dialogues and they extended their knowledge bases through the research they conducted on topics of the children's interests.

8.5.2 Interpersonal

Facilitated action research requires excellent skills of collaboration and of the sharing of power. The co-construction of each team's programme of action research was facilitated by the trusting and reciprocal relationships developed between each team and me, as the "outside" member of each research team. From the outset I was committed to transparency in all interactions and to extend consideration of influences to include those in all planes of activity. I never saw myself as the expert in our work, as I was genuinely learning with and through each team. Ongoing attention to ethical issues was also important, since in qualitative research it is difficult to anticipate every contingency that might evolve.

The research process identified some major skills and processes these teachers refined or developed during their action research, which contributed to their successful creation of a co-constructive learning environment. In the interpersonal plane, teachers need to have excellent skills of collaboration with each other if they are to be successful in sharing their power with children, and this implies good team dynamics under collaborative leadership. In the interpersonal plane teachers working in a co-constructive learning environment demonstrated their abilities in co-constructing meanings, in making links in thinking across time and activities in relation to children's own ideas **and** in developing full, two-way intersubjectivity with children. In the personal plane teachers and children alike were empowered through engagement in authentic learning activities.

8.5.3 Community/institutional

In the institutional plane management has a role to play, in the employment of qualified teachers, the provision for professional development and support for collaborative planning and provision of equipment. The institutional plane is relevant for teachers in collaborative goal-setting, commitment to reflective teaching and an articulated philosophy of learning with supportive planning processes that include the researching of topics of children's interests, especially in the upskilling of teachers in relevant discipline knowledge.

The teachers in the four case study centres were drawn into ever-wider spheres of interaction, as they interacted both in their own teams and in the wider communities of practice with their peers. This interaction included a closer relationship with the university culture, through my role as their facilitator and with their peers when they presented workshops and a publication, as well as through their own attendance at conferences, in other professional development and in higher qualification study. These collaborative learning communities also extended across time and space, as we engaged in what Wells (2000) calls "knowledge building through dialogue about texts" (p.76). Because of the relatively permanent record of writing, today's scholars and practitioners are able to dialogue about Vygotsky's visions for education (Lotman, 1988) and the teachers in this study did so not only for Vygotsky's ideas but also for those of a variety of more recent writers. Thus (historical) time and distance were not barriers to the teachers and me engaging in co-constructing our learning using a wide variety of methods and means.

The tools of research that were readily available in the community/institutional plane because of the particular time in history in which the study was completed included action research and technological tools. Progressive case study action research provided the structure that allowed theory to evolve over a period and in response to specific centre issues. Because each centre was unique, sociocultural theory in the practice of each would hold different meaning. Addressing the specifics of each centre led to insights and models that made sense for practitioners and researcher across these differing contexts. The use of propositions, supported by the sorting tool of NUDist, encouraged evolving concepts and the synthesis of these models. Linking action

research with the co-construction of understandings provided the incentive to equate adults as collaborators with their work with children; this insight allowed the professional development with the teachers to be clearly seen as a model for their work with the children.

The technological tools used to support teachers' co-construction of learning with children in this project included a tape recorder, or dictaphone, a video camera with radio microphone (which could also be used with the tape recorder) and a computer. The computer was used at many levels: to record transcripts of the children's dialogues and their projects; to research topics of children's interests, on the World Wide Web and the installed encyclopaedia programme; to print photos from the video of children's work and interactions; and to assist in the maintenance of children's portfolio records.

Photographs of children and their work have been used in early childhood centres for many years, to support children's recall and dialogue about topics of interest to them; they are often included in individual children's portfolios, which become a record of the child's time at the centre. The use of recent technology that allows the production of photo shots from video recordings has many advantages over either the viewing of the video, or the development of ordinary photos. The more recent advent of the digital camera has led to the use of images of children's work and activities in many early childhood centres in New Zealand, especially advantageous to support records of learning stories of children and projects with children.

This research has identified the contributions of all three planes of activity, the personal, the interpersonal and the community/institutional, to the early childhood centre. Not all the centres in the study had sufficient foundations in each of these planes to be able to engage in professional development that would lead to ongoing change in practices and philosophy. Each centre self-selected into the programme because the teachers considered they were ready as a team to embrace sociocultural theory. This readiness implied a team culture of openness to change, ability to take risks with each other (in the interpersonal plane) and an understanding of the influence of philosophy in practice (in the institutional and personal planes), which too few of the members of one group held. Other factors resident in each centre that contributed to the three centres being successful in making changes in their practices and philosophies included:

qualifications in early childhood teaching of the team members; recent professional development; leadership; support of management for change; and support for teams in their planning collaboratively for children (all in the community plane).

These findings are supported by several New Zealand studies (Gaffney & Smith, 1997), which found that factors such as training, staff turnover and high quality professional development were important contributors to teachers making maximum use of further professional development. Gould (1998) found that teachers in her programme of professional development were hampered in their centre programme development by having unqualified staff members in their centres and McLeod (2002) identified a "void in the area of curriculum and pedagogical leadership" (p.319). Carr, May and Podmore (2000) found that having prior knowledge of *Te Whāriki* and confidence in its use facilitated reflection and self-evaluation and that highly qualified teachers were in a better position to plan and implement with insight and understanding. The action research facilitators of the professional development on which Carr, May and Podmore (2000) reported were required to provide more support for less qualified teachers. Administrative support (in the institutional plane) for planning also facilitated positive outcomes for a co-constructive environment (McLeod, 2002).

This study has made specific links between the professional development, planning and implementation practices and improvement, teacher-child interactions and transformation of participation for children, thus addressing the three planes of activity that mediate the co-construction of understandings with children. While maintaining a clear focus on improving their interactions with the children, the teachers identified historical and cultural influences on these from the perspectives of their personal and centre philosophies and practices. In claiming a transformation of participation for children the teachers were aware of the complex set of circumstances and interactions in the children's communities of learning that contributed to such a transformation. The teachers' understanding of sociocultural theory and of *Te Whāriki* resulted in changed practices of planning and implementation of activities for children concurrently with their newly co-constructive interactions.

8.6 LIMITATIONS OF RESEARCH

All participant teachers in the co-constructed action research were at the time of the research working in the region of the local university. This university was a major provider of professional development in this region, under contract to the Ministry of Education for the years before the study and throughout its duration. This meant all the teachers and centres participating in the research were influenced in their implementation of *Te Whāriki* by the underpinning philosophies and beliefs of the professional development facilitators, of which I was also the Director until the beginning of my research. Although the Ministry of Education held (irregular) meetings of their early childhood contractors from throughout the country, the sharing of philosophies and practices of facilitation remained minimal. There is likely to be discrepancy between outcomes of their professional development for teachers in different regions of New Zealand and when working with different providers. These factors, along with those of contiguity of the centres' location in their communities of practice, lead to the possibility that the beliefs and practices of centres in this region could be quite different from those found elsewhere in New Zealand, especially in relation to the significant influence of the implementation of *Te Whāriki*. Any extrapolation from the study to other areas in New Zealand, as recommendations for further study or implementation, would need to proceed with this possibility in mind. The fact that my work was with only four centres and these each of a different kind adds to the possibility that the findings are specific to these programmes of professional development.

My efforts to protect teachers from having their programmes of professional development influenced by my concurrent research were not entirely successful. Even during my work in Manuka, the teachers' language implied my ownership of their planning cycle "because this happened during *your* planning cycle, Barbara" (italics added). I will never know just how different any of the programmes, but especially that of Haven, would have been had they not also been involved with my research. Here, I reinforce the work of Human Ethics Committees in protecting all parties from harm. In any future such concurrent research/professional development, I would build in regular checks with the participants, including any facilitator who was involved with the teachers, reinforcing that they were free to develop their professional development in

the direction suggested by their contract for the professional development, rather than in the direction of a researcher, if these differed. Only one the four centre teams was prepared to report its own research. It would have been useful to have heard the reports of their research in their own words, from each of the other three centre teams and this could have been a requirement of the research.

This research was conducted with mainstream early childhood settings and all the case study children were of European descent. New Zealand consists of a very large number of cultures and sociocultural theory may not be as relevant to other cultures. Empowering children in public educational systems may not also empower them to live in their own communities. Lassbo and Hakvoort (1999) found quite differing ideals for child-rearing amongst mothers in eight European countries. Parents and teachers of lower socio-economic groups have been found to expect a higher degree of control from children's learning institutions, as do the teachers of children with disabilities (Leiber et al., 1998; Mahoney & Wheeden, 1999). Sherley's (2002) research with a Samoan preschool indicates a quite different role for preschool teachers than the co-constructive one advocated in this report; empowerment of children as equal inquirers with their adults would be counter to their lives within their traditional families. Working within the sociocultural paradigm with groups other than mainstream might look quite different from my work with the four case study centres and would require sensitivity to the understandings and expectations of each group for its children's learning. Airini (1998) identified that good teaching for Maori needs to "confirm links across generations and learning contexts" (p.20), suggesting that sociocultural theory might well be a key to providing adequately for Maori children in mainstream education.

8.7 RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

In this section I make recommendations for practices in teaching, for further research in sociocultural activity in centres, and for collaborative professional development.

8.7.1 Recommendations in practices of teaching in early childhood

I recommend that early childhood teachers record teacher-child dialogues for analysis, both to identify children's interests and to analyse their own interactions and use of power with the children. With a record of their dialogues with children, teachers are often able to identify ongoing interests and ideas they might otherwise have missed. From the teacher's perspective, analysis of self-chosen records of personal best practice is both reinforcing and challenging. Teacher-child dialogue is a powerful tool for change, encouraging teachers to critically reflect on their philosophies of learning and their practice. An important aspect of such reflection is the clarification of teachers' understandings of terminology such as the scaffolding and co-construction metaphors.

It seems all too easy for adults to remain in control of the learning process, even when plans are based on observations of children's interests, equipment is provided in support of extending these and a learning story or a project board is created to demonstrate the processes and activities engaged in. It is only at the level of ongoing teacher-child interactions and dialogues, within the context of the centre's planning and documentation processes, that empowerment and co-construction can be assessed. It is such dialogues my research has identified as being central to the teachers' regular analysis of their interactions with children. Gardner's (1996) research on teacher-child interactions had a similar focus on the "what must be done" level of goals (p.51), as the operational level at which the broad institutional goals combine with the specific tasks and activities, allowing their expression in teacher-child interactions.

A second recommendation is that planning in the sociocultural paradigm is collaborative and cognisant of planes of analysis. Teachers' understandings of sociocultural theory is foundational to appropriate implementation of *Te Whāriki*, whatever structures, such as learning stories or project development, are put in place in support of this. The idea of "community" has been central to my work in the research process and in the reporting of outcomes of teachers and children when all planes of activity are addressed in the interests of developing communities of practice. Looking through successive lenses to each plane provides both an overall understanding of the situation and an in-depth appreciation of interactions and outcomes for groups and individuals. Neither is analysis limited to three planes; teachers and researchers could in

future include in their planes of analysis a genetic or a biological plane, as do neurological scientists and brain researchers (Shore, 1997), or a spiritual plane, which might be especially relevant for Maori (Airini, 1998). The application of lenses to planes of activity becomes even more influential as a tool for teachers and change when the analysis involves all members of the teaching team. It would be useful to identify children's transformation of participation as the result of a clear focus on several planes of analysis in a variety of settings and cultures within New Zealand.

Collaborative planning for projects is a logical outcome of teachers hearing children's voices. Projects extend children's own interests and understandings and can engage all participants as a community of inquiry in authentic learning experiences, "re-presenting" (Moll, 2000) activities from their home cultures that are important to them.

A third recommendation is that teachers hold a clearly articulated philosophy of learning, and that they make links between this philosophy and what happens for children. Teaching teams develop systems for observing, for implementing plans to extend children's learning, and to assess and evaluate these plans. Systems and forms are necessary to make recording and communication manageable. However, the focus for assessment needs to remain on what happens for children, how their participation in cultural activities develops as the result of any centre systems, and whether what happens for children is consistent with their teachers' philosophies of learning.

Carr (2001) advocated a Learning Story approach based on the development of children's dispositions for learning. This is claimed to be a sociocultural approach to working with children, and Learning Stories can develop into projects. New Zealand researchers such as Carr (2001), Carr, May and Podmore (1998) and Podmore, May and Carr (2001) have made presentations and written publications in support of the use of Learning Stories as a planning and assessment format for New Zealand centres. This is a New Zealand system, well researched and negotiated in our own country, based on and supporting the implementation of *Te Whāriki.* The advent of Learning Stories post-dated my initial work with the four teaching teams, which was related to the development of teacher-child interactions and the project approach.

The major importance for both Learning Stories and for projects is that teachers use them to move children forward in their understanding and appropriation of their cultural tools for learning. As with the development of projects, the successful implementation of Learning Stories could be expected to require the teaching team to have a good understanding of the sociocultural underpinnings. Understanding the theory of empowering and co-constructing with children then needs to be combined with skilled practices of interactions and group processes and of planning for authentic and in-depth experiences. My queries about Learning Stories are similar to my concerns about projects gained through my research with these four centres; the use of either system may or may not lead to authentic learning experiences that value and empower children and adults in their co-construction of understandings. It is not the planning system that is crucial, but the teacher-child interactions and activities through which the system is implemented.

8.7.2 Suggestions for further research in the practices of early childhood

While the children with whom the teachers in my study worked were all 4-year-olds, projects have also been found to be effective in supporting younger children's learning (Gandini & Edwards, 2001). Research on the special nature of projects in New Zealand infant and toddler centres would generate data on such subjects as: the development of intersubjectivity between very young children and their teachers, and between children; the role of scaffolding and of co-construction for this age group; and suitable topics that encourage engagement.

The focus of this research was dialogues between teachers and children, with the major emphasis on supporting teachers in the improvement of their skills and processes of co-constructing understandings with children. Children's interactions with each other are influenced by their environment and especially by the models of interaction provided by their teachers and parents (see p.14 this report). It would be valuable to research children's changes in participation in relation to their interactions with each other when they are involved in a community of learners that consistently empowers them. Children readily develop intersubjectivity with each other (see p.16 this report) and support each other's learning, of which there have been many examples provided in this research. The analysis of child-child dialogue, using similar processes for recording and analysis

to those used in this research, would provide valuable information on children's use of power with each other, including any gender influences, and how this changes as each child is empowered.

Ongoing professional development in learning communities engages teachers in both constantly upskilling themselves in current theory and in reflecting on their philosophies of learning as the transformation of these into their practices. The scaffolding-co-construction debate is just one aspect of sociocultural theory that teachers might be interested in exploring in their own context. The extent to which the scaffolding metaphor enables teachers to claim full implementation of the principles of *Te Whāriki* would be worthy of research in a wider selection of centres. Have some teachers accepted the generic definition of scaffolding of the early childhood literature, as expressed in Dockett and Fleer (1999) as the elements of scaffolding? If this list of elements describes the substance of a teacher's metaphor of interactions with children, then scaffolding for this teacher is the larger concept that also includes co-construction of understandings. Such teachers would be sharing their power with children and involving them as co-constructors of their own learning. My research indicates that some teachers may actually have a narrower concept of scaffolding that maintains control of the direction of learning with the teacher. The importance of any differences between scaffolding and co-construction, as these are practised in the field, is not to be academically pedantic, but that teachers are able to implement the full range of interactive strategies as appropriate. To improve the teachers' skills of interacting with children, a facilitator needs to support them in articulating their philosophies of learning as evidenced in their current practices.

8.7.3 Implications and recommendations for professional development

One of this study's contributions to the professional development literature is the equating of principles of co-constructing understandings with children, with principles of action research (Table 3.1). Socially mediated understandings that transform participants' activity in future situations are the foundation of sociocultural theory (Rogoff, 1998). Teachers can be readily supported in making links between their own experiences of facilitated action research and their work with children. For teachers' professional development to provide experiences of co-construction, it is vital the

facilitator herself understands and employs sociocultural principles. There are implications here for the qualifications and professional development of professional development facilitators.

This project has advocated co-constructed action research as appropriate when the outcome of professional development is expected to be whole-centre change. Other recent research has criticised action research because it requires the whole centre to be involved (Lidington, 2000), when not all centres are in a position, especially without sufficiently qualified teachers, to be able to undertake such a commitment. In my project, however, the least qualified teacher (at Kauri) was one who contributed to her centre's professional development wholeheartedly, because she was so valued and included in her team's work. This is not to advocate for unqualified teachers, but there is a qualitative difference between teachers who are "in-training" and those who choose to not undertake teacher education qualification programmes. I advocate for teachers who reflect on their practices. In the current climate of effort towards improving the level of quality of centres beyond the minimum, support for centre teams ready to be extended in implementing personal best practices (and there are many such centres) have much to offer the advancement of understanding quality programming and learning.

I recommend collaborative action research as a methodology that empowers teachers to take responsibility for their own professional development. In developing their own systems of planning to extend children's learning, teachers learn to be proactive in demonstrating their meeting external expectations of accountability, such as to the Ministry of Education through ERO assessments. More importantly, teachers involved in action research are taking control of their own quality of programming in self-review processes, that lead to higher quality than is likely under the influence of external review (Farquhar, 1999a, b). Understanding the foundational philosophies of *Te Whāriki* provides greater depth and more freedom in interpretation of its principles, within the centre's own sociocultural environment.

What needs to happen in New Zealand to increase the acceptance of implications of sociocultural theory for children's learning? The current drive for improvement of quality standards in centres includes a focus on teacher-child interactions that empower

children (see for example, The Quality Journey, Ministry of Education, 1999). Professional development will need to continue to emphasise what this means in practice and how each centre needs to change its processes if it is to develop its hearing of and responding to the child's voice. Professional development facilitators need to be competent in the application of the co-constructive models of professional development; they also need to be as highly qualified as possible, with research experience, as well as experience in the field. Action research used as a co-constructive model is effective in whole centre development when the centre team and the facilitator all hold a collaborative approach to the process.

Crucial elements in encouraging children's thinking in the current study have been the analysis of teacher-child dialogues in terms of the teacher's response to the child's interests and to her/his own use of power; professional development facilitators need to be skilled in supporting teachers in their analysis of their own dialogues with children. In the centres that demonstrated good teamwork and a commitment to self-improvement and quality, the facilitated co-construction of professional development used in this research project was successful as an intervention in changing teachers' philosophies of learning and their practice of planning and interacting with children. The collaborative research was also effective in changing the researcher's understandings of teacher-child co-constructive activities.

EPILOGUE

Whether applied to facilitators of action research working with teachers, or to teachers working with children, the co-construction of learning is an empowering metaphor. Co-construction requires the development of mutual respect, the hearing of each other's voices, the developing and maintaining of intersubjectivity and the sharing of power in a climate of transparency and honesty. In planning to extend children's understanding through co-constructing learning with them, teachers commit themselves to providing time and space to listen to what children are currently thinking and to develop skills and processes for listening and for planning ongoing authentic projects based on the children's interests. When working co-constructively with teachers, facilitators listen to what the teachers think and understand and support them to analyse their current practices as a heritage of past and present philosophies. Combined with a sound knowledge of sociocultural theory as the foundation of *Te Whāriki*, this new understanding of what they are doing and why, provides teachers and facilitators with valuable tools with which to transform their practices into communities of inquiry that empower all participants. As one teacher, reflecting three years later, said of her personal outcomes within the collaborative action research programme:

> *During the professional development phase of this project, my skills as a teacher have been transformed to enable me better to recognise the potential in all children and situations. It was so valuable for someone to put a framework to my thinking to affirm that the way I was working was a valid approach to teaching. You can dance around in a circle thinking the same things again and again, but a framework helps us to move forward, to do the long jump. The journey that I want to take is to make a difference for children. Being involved in the research was a catalyst; taking the seminars for our peers has led me in new directions.*
>
> (Personal communication, October, 2002)

That this teacher is now herself a facilitator of professional development for Early Childhood teachers is testimony to her positive experiences in our programme of action research.

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List of Appendices

Appendix A:

Copies of information sheet, letters to participants, permission forms

APPENDIX A1

INFORMATION SHEET FOR CASE STUDY CHILDREN'S PARENTS

SCAFFOLDING LEARNING IN EARLY CHILDHOOD CENTRES

INFORMATION SHEET FOR CASE STUDY CHILDREN'S PARENTS.

INTRODUCTION

Kia Ora,

My name is Barbara Jordan; I am the Coordinator of Early Childhood Programmes, and Senior Lecturer in the preservice programmes at Massey University College of Education (MUCE). I am approaching you with this consent form in a different role - that of a PhD student undertaking research in a few early childhood centres.

The purpose of my research is to study how children's learning in early childhood programmes is supported by staff, management and parents, by the environment and by their peers, and the factors which need to be present in an early childhood service in order for this learning to take place. The staff members, and possibly also parents/management members in your centre, are currently involved in a programme of professional development, provided by MUCE. During this programme they are developing their curriculum to incorporate Te Whaariki, the national early childhood curriculum document, into your centre, in ways which complement and/or extend current practices. The expectation of all such professional development programmes is that there will be an improvement in the quality of the service provided for the children. The staff in your centre volunteered for this programme of professional support. At all times the staff and parents of your centre are in control of any changes which they, and you may choose, jointly, to make in your centre.

I will be working alongside the staff team as they collect information to support your children's learning. This will involve videoing the children during sessions, to record as much as possible of what happens as the result of staff planning, based on observations of the current focus children. Staff members will use this information to consider possible extensions in the ways they talk with children, and plan to extend their ideas.

I hope to be working in your centre during the first and second terms of 1999, with perhaps some follow up sessions later in the year as requested.

My supervisor for this project is Dr Joy Cullen, from MUCE. She may be contacted with any concerns or queries you may have, by phone: (06) 35 79104.

I am available by phone: also (06) 35 79104, with any queries or concerns

NATURE OF YOUR REQUESTED INVOLVEMENT, AS A PARTICIPANT

Within each of approximately four early childhood centres, I will be working with specific children on which to focus my data collection. These children will be chosen by the staff members, to match as closely as possible their programme of planning, as well as the group I have chosen to study over the next 12 months. Your child is one of the current planning focus children, and I am inviting you and your child to be involved in the following ways:

1. Your child would be one of three main subjects of video-recordings, made during a normal early childhood session at your centre. S/he would wear a small radio-microphone attached to the front clothing; this allows the actual camera to be less intrusive, and for any language to be more clearly heard. Each recording will last for approximately 20minutes, so long as the children are happy to be wearing the mic. I will be seeking to make such a record of your child a few times this year, according to the decisions of your staff and the information which will support their planning procedures. I will in no way be assessing your child's performance. What I am looking for is any changes in the amount and quality of scaffolding of your child's learning which occurs during the implementation of this programme of professional development.

2. If possible, I would like you to have the opportunity to discuss your child's learning programme, at home and in the centre, during the time of the staff planning for them. I would arrange to ring you at a mutually suitable time each day for a week, to ask simple questions about his/her activities during the day, and whether they carry their interests over from the centre to home, and vise versa. The staff members are aware that you could be involved in this way. Your responses to the researcher will not be revealed to the staff without your permission; however, if you are happy for this to occur, they will form part of the planning for your child's programme at the centre. I

RIGHT TO DECLINE

Please note that you are under no obligation whatsoever to participate in this research programme.
You have the right to refuse to answer any particular question, and to withdraw your child from the study at any time
You have the right to ask any question about the research programme at any time
Any information you provide is on the understanding that your name and that of your child, and the centre, will not be used in any publications resulting from this research.
Confidentiality and anonymity will be maintained at all times.
Only the researcher, her assistant(s), and the research supervisors will have access to the audio and video tapes. The staff members will view the tapes only, when they use them to reflect on their own skills of scaffolding children's learning. Any research assistant, who may be involved in both recording and transcribing video and audiotapes, will sign an agreement to maintain confidentiality.
You will be provided access to a summary of the findings, and to any written documentation which is produced from this research.
The video and tape recordings will be used only for obtaining data for this research, unless specific permission is obtained from you. Where the video recording is integral

to the programme of professional development, it may be used within this programme, with your explicit permission. You have the right to request that any particular sequence involving your child be deleted, at any time. At the conclusion of the study, the tapes will be stored in a research archive.

Confidentiality

All records, questionnaires, interviews, videotapes and transcriptions will be identified by code number during the research and by pseudonym in the final report. The key list linking names, code numbers, and pseudonyms will be stored securely and separately from other materials, and will be accessible only to the researcher.

Sharing of information

Throughout the research participants will have access to their own data, and parents/guardians to that of their children, with the opportunity to discuss it. At the completion of the study, each case study centre will receive a copy of any final report. Any articles written within the project will be submitted to the participants concerned for their consent, with the right to any editing of material which could identify or be harmful to them in any way. Where appropriate, the children as well as the adults will view their own video recordings, as one aspect of professional development and metacognition.

Use of information from the study

Results will be published in the researcher's PhD, and in scholarly and professional journals, and/or presented at research conferences, only after all participants have had the opportunity to read them and to provide feedback. The researcher undertakes to provide confidentiality at all times, and to ensure that no harm is done to any participant as the result of either data collection or of publication of the results.

APPENDIX A2

INFORMATION SHEET, FOR STAFF AND MANAGEMENT COMMITTEE MEMBERS

SCAFFOLDING LEARNING IN EARLY CHILDHOOD CENTRES.

INFORMATION SHEET, FOR STAFF AND MANAGEMENT COMMITTEE MEMBERS, ON THE NATURE OF THE REQUESTED INVOLVEMENT IN RESEARCH

INTRODUCTION

Kia Ora,

My name is Barbara Jordan; I am the Co-ordinator of Early Childhood Programmes, and Senior Lecturer in the preservice programmes at Massey University College of Education (MUCE).

I am approaching you with this consent form in a different role - that of a PhD student undertaking research in a few early childhood centres.

The purpose of my research is to study how children's learning in early childhood programmes is supported by staff, management and parents, by the environment and by their peers, and the factors which need to be present in an early childhood service in order for this learning to take place. The staff members, and possibly also parents/management members in your centre, are currently involved in a programme of professional development, provided by MUCE. During this programme they are developing their curriculum to incorporate Te Whaariki, the national early childhood curriculum document, into your centre, in ways which complement and/or extend current practices. The expectation of all such professional development programmes is that there will be an improvement in the quality of the service provided for the children. The staff in your centre volunteered for this programme of professional support. At all times the staff and parents of your centre are in control of any changes which they, and you may choose, jointly, to make in your centre.

I will be working alongside the staff team as they collect information to support your children's learning. This will involve videoing the children during sessions, to record as much as possible of what happens as the result of staff planning, based on observations of the current focus children. Staff members will use this information to consider possible extensions in the ways they talk with children, and plan to extend their ideas.

I hope to be working in your centre during the first and second terms of 1999, with perhaps some follow-up sessions later in the year as requested by the centre staff.

My supervisor for this project is Dr Joy Cullen, from MUCE. She may be contacted with any concerns or queries you may have, by phone: (06) 35 79104.

I am available by phone: also (06) 35 79104, with any queries or concerns

NATURE OF YOUR REQUESTED INVOLVEMENT, AS A STAFF/MANAGEMENT PARTICIPANT

Within each of approximately four early childhood centres, I will be working with 3 or specific children on which to focus my data collection. These children will be chosen by the staff members, to match as closely as possible their programme of planning, as well as the group I have chosen to study over the next 12 months. In particular, I expect to be revisiting your centre later in 1999, in order to assess whether any changes implemented during this year, have resulted in further ongoing changes. Therefore we need to choose children who will still be in early childhood(and, hopefully in your current centre), in the fourth term of 1999.

1. The three or four case study children will be the main subjects of video-recordings, made during a normal early childhood session at your centre. S/he would wear a small radio-microphone attached to the front clothing; this allows the actual camera to be less intrusive, and for any language to be more clearly heard. Each recording will last for approximately 20minutes, so long as the child remains happy to wear the mic. I will be seeking to make such a record of your child a few times this year, according to the decisions of the staff and the information which will support their planning procedures. I will possibly also be returning later in 1999. I will in no way be assessing your child's performance. What I am looking for is any changes in the amount and quality of learning which is encouraged at your centre, when staff participate in professional development, and the factors which contribute to this learning.

2. Staff will view each video recording, as part of both their programme of professional development, and in support of their normal observations and planning procedures. During these viewings, an audiotape will record discussions and decisions; these will allow us to keep track of progress, as well as provide a record for my research purposes. These discussions will generally be a part of the centre's programme of professional development, during 1999.

3. The time involved in this research will include:
   (a) Viewing and discussing the videos of each case study child, and/or the transcripts of these (one to three recording sessions, and one to three discussion sessions).
   (b) Being involved with the researcher in the programme planning processes for the chosen case study children (as part of the above sessions).
   (c) Viewing and discussing further videos of each case study child, and/or the transcripts of these, during a possible follow-up visit.

RIGHT TO DECLINE

- Please note that you are under no obligation whatsoever to participate in this research programme.
- You have the right to refuse to answer any particular question, and to withdraw your child from the study at any time
- You have the right to ask any question about the research programme at any time

- Any information you provide is on the understanding that your name and that of your children, and the centre, will not be used in any publications resulting from this research. Confidentiality and anonymity will be maintained at all times.
- Only the researcher, her assistant(s), and the research supervisors will have access to the audio and videotapes. The staff members will view the tapes only, when they use them to reflect on their own skills of scaffolding children's learning. Any research assistant who may be involved in both recording and transcribing video and audiotapes, will sign an agreement to maintain confidentiality.
- You will be provided access to a summary of the findings, and to any written documentation which is produced from this research.
- The video and tape recordings will be used only for obtaining data for this research, unless specific permission is obtained from you. Where the video recording is integral to the programme of professional development, it may be used within this programme, with your explicit permission. You have the right to request that any particular be deleted, at any time. At the conclusion of the study, the tapes will be stored in a research archive.

Confidentiality

All records, questionnaires, interviews, video tapes and transcriptions will be identified by code number during the research and by pseudonym in the final report. The key list linking names, code numbers, and pseudonyms will be stored securely and separately from other materials, and will be accessible only to the researcher.

Sharing of information

Throughout the research participants will have access to their own data, and parents/guardians to that of their children, with the opportunity to discuss it. At the completion of the study, each case study centre will receive a copy of any final report. Any articles written within the project will be submitted to the participants concerned for their consent, with the right to any editing of material which could identify or be harmful to them in any way. Where appropriate, the children as well as the adults will view their own video recordings, as one aspect of this professional development related to children's thinking and learning.

Use of information from the study

Results will be published in the researcher's PhD, and in scholarly and professional journals, and/or presented at research conferences, only after all participants have had the opportunity to read them and to provide feedback. The researcher undertakes to provide confidentiality at all times, and to ensure that no harm is done to any participant as the result of either data collection or of publication of the results.

APPENDIX A3

RESEARCH CONSENT FORM PARENT/GUARDIAN OF CHILD CASE STUDY

SCAFFOLDING LEARNING IN EARLY CHILDHOOD CENTRES

RESEARCH CONSENT FORM
PARENT/GUARDIAN OF CHILD CASE STUDY

Date:
Early Childhood Centre:
Name:
Child's Name:

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand that I have the right to withdraw my child and myself from the study at any time, and to decline to answer any particular questions.

I agree to provide information to the researcher on the understanding that confidentiality will be maintained at all times. *(The information will be used only for this research and publications arising from this project.)*

I also understand that I have the right to ask for the video/audio tape to be turned off at any time during interviews or observations.

I give my consent to the following:

1. I consent/do not consent to my child/children being videoed and observed as part of the overall centre programme observations. I am aware that I have the right to review all these observations and to discuss them as part of the centre's programme of professional development.

2. I agree/do not agree to being interviewed, and to this being audiotaped.

Signed: (parent)
Date:

Signed (Barbara Jordan, Researcher)
Date:

APPENDIX A4

RESEARCH CONSENT FORM FOR STAFF INVOLVEMENT

SCAFFOLDING LEARNING IN EARLY CHILDHOOD CENTRES

RESEARCH CONSENT FORM
STAFF INVOLVEMENT

Date:
Early Childhood Centre:
Name:
Supervisor/Head Teacher:

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time. In particular, I understand that the research may continue into the third term of 1999.

I understand that I have the right to withdraw the centre and myself from the study at any time, and to decline to answer any particular questions.

I agree to provide information to the researcher on the understanding that confidentiality will be maintained at all times. *(The information will be used only for this research and publications arising from this project.)*

I give my consent to the following:

1. **I consent/do not consent** to our centre being involved as a case study centre in this research programme. I realise that this may be an up to 12-month commitment.

2. **I consent/do not consent** to my interactions with children video taped. I am aware that I have the right to view all these observations and to discuss them as part of the centre's programme of professional development. I also understand that I have the right to ask for the video/audio tape to be turned off at any time during interviews or observations.

3. **I consent/do not consent** to my discussions of the video recordings being audio taped, and for the transcriptions of the tapes to be used as research data. I am aware that I have the right to listen to all these recordings and to discuss them as part of the centre's programme of professional development. I also understand that I have the right to ask for the audio tape to be turned off at any time during the interviews.

Signed: (staff member) I agree/do not agree to being interviewed, and to this being audio-taped. Signed (staff member) Date:	Signed (Barbara Jordan, Researcher) Date:

APPENDIX A5

RESEARCH CONSENT FORM CENTRE INVOLVEMENT

SCAFFOLDING LEARNING IN EARLY CHILDHOOD CENTRES

RESEARCH CONSENT FORM
CENTRE INVOLVEMENT

Date:
Early Childhood Centre:
Name:
Supervisor/Head Teacher:

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time. In particular, I understand that the research may continue into late 1999. I understand that I have the right to withdraw the centre and myself from the study at any time, and to decline to answer any particular questions.

I agree to provide information to the researcher on the understanding that confidentiality will be maintained at all times. *(The information will be used only for this research and publications arising from this project.)*

I give my consent to the following:

1. **I consent/do not consent** to our centre being involved as a case study centre in this research programme. I realise that this may be an up to 12 month commitment

2. **I consent/do not consent** to my interactions with children video taped. I am aware that I have the right to view all these observations and to discuss them as part of the centre's programme of professional development. I also understand that I have the right to ask for the video/audio tape to be turned off at any time during interviews or observations.

3. **I consent/do not consent** to my discussions of the video recordings being audio taped, and for the transcriptions of the tapes to be used as research data. I am aware that I have the right to listen to all these recordings and to discuss them as part of the centre's programme of professional development. I also understand that I have the right to ask for the audio tape to be turned off at any time during the interviews.

I agree/do not agree to being interviewed, and to this being audiotaped.

Signed: (Supervisor/Head Teacher)
Signed (Barbara Jordan, Researcher)
Date:

Appendix B

Details of Pilot Study

Purpose of pilot study

1. To trial methods of data collection, including:
   - General observation of centre.
   - Document search and discussion of methods of planning, assessment and evaluation in the centre.
   - Observations of an individual child in interaction with peers and with teachers.
   - The utility of video recording as both a tool for observation and for eliciting staff and parent responses as they reflected on their scaffolding practises and sources.

2. To assess whether it was realistic to expect that scaffolding techniques can be successfully applied in the early childhood setting (Fleer, 1995).

3. To develop initial protocols for observing and developing the scaffolding of children's learning.

Research activities in Pilot Study

Phase One: Professional development with teachers.

1. Meeting with the three teachers to discuss the possibility of my following one teacher's planning cycle with her focus child, including video-recording her interactions with him or her during one session. Discussion of ethical issues and procedures and the need to gain consent from all the parents, and especially for the video recording. Collection of samples of the centre's observation forms, planning sheets, and evaluation sheets as the teachers articulated how these artifacts were utilised in their planning for children's thinking.

2. A twenty minute observation and video recording of J., a four-year-old boy, as he engaged in free play with up to three other children, and in interaction with the teacher, following J.'s and his friends' familiarisation with the camera.

3. Discussion of video and transcription of teacher-child dialogues with teachers. Identification of examples of scaffolding, with analysis for improvement in verbal interactions.

Phase Two: Researcher analysis.

4. Evaluation of feasibility of the proposed study of teachers scaffolding children's learning

5. Development of propositions as a framework for analysing case study data.

Observations of pilot centre

Pilot philosophy of learning in practice: Vignette

A four year old boy and girl struggle with tying a load of wood onto a wagon. They have set up a course, with roads marked with STOP and CROSSING signs, around which they want to guide the wagon. In addition to practising their new skills of tying knots, in a real situation such as securing a load, the children each struggle to exert their influence on the other.

Vanessa (child1): They pile the wood up here so it doesn't fall off.

Winifred (teacher):That sounds like a good idea.

Vanessa: I know how to tie it up.

James (child 2)I **know** how to tie it up.

Winifred: Perhaps you could help each other.

Vanessa: You don't James. You don't know how!

Winifred: I think James might be able to show you how he ties it. He just showed me how he ties a knot.

This very small time sample of one kindergarten session is the outcome of several aspects of the teaching team's philosophy in practise. These teachers have identified that they believe that children extend their cognitive skills and learning through: the teachers knowing the children's interests and strengths, through regular and comprehensive observations, and identification of currently dominant schema (Athey, 1990; Meade, 1995; Nutbrown, 1994) (Glossary) that each child is working on. The planning cycle in this centre included a focus on three children, one in each teacher's whanau group, for a three-week period, to ensure that all children and their families became well known by the teachers; were encouraged to engage in activities that extend their current schema (identified for James in the above vignette, as "transportation"); were empowered to make decisions while engaged in real-life activities at the centre; and were supported by teachers, to extend their ideas and their actions beyond what they could achieve without adult support. These activities were revisited as often and for as long as the children's interest was maintained; working in small, self-chosen groups of peers, and engaging in adult-child dialogue, to extend ideas and to make links between home and centre activities. Parents were an integral part of the planning in this centre, through incidental and planned discussions with the teachers about their children's programme of learning..

General observation of centre.

Figure: Pilot Centre Demographics

Location	Small Central North Island town.
Special nature	Semi-rural, 30/45 sessional state kindergarten
Families	Approximately 70 on the roll. Many children travel from neighbouring towns and farms to attend, and will graduate to a wide-spread number of primary schools. Because of distances travelled, and also because of the centre's philosophy of encouraging parent participation, parents often stay at the kindergarten during the sessions. Two children currently attending are assessed as having "special needs". There appear to be no major problem behaviours within the group of children.
Number sessions	5 mornings for from 3;11 to 5;0 year old children; 3 afternoons for 3;3 to 3;11 year old children.
Number children	25 per session. Each child can attend up to 5 per week, though the majority would attend 2 or 3. This means an ever-changing group of children maintaining their relationships, and for the staff to plan for.
Staffing	Only fully qualified (Diploma of Teaching, Early Childhood minimum) and

2.6 teachers (3 am, 2 pm sessions)	registered staff are employed in the kindergarten association to which this centre belongs. Two of the teachers are Registered Teachers, the third Provisionally Registered; One has 2/3 of a B.Ed, one has completed papers towards her Higher Diploma of Teaching. The team's years of experience range from one to 20. Recent professional development of team: frequent and ongoing, with a clear focus on the implementation of Te Whaariki as a planning tool. Topics addressed included: identification of centre philosophy; planning procedure strengths; changes the team chose to make in planning procedures; knowledge of Te Whaariki and its application planning; planning for individual children in the group setting; developing profiles for each child; developing a planning cycle; peer and self-assessment; schema theory and application to practice; identification of the core curriculum, and a cycle for the continual evaluation of the various aspects of this. Informal observation of the staff members working with children confirms all three teachers as "warm demanders" (Meade, 1995).
Building and grounds.	Purpose built with good indoor-outdoor flow of play and good visibility of whole grounds from inside.

Centre routines and planning structures

Timetable: morning sessions for children from 3;5 to 5;0years of age; afternoon sessions for children from 2;5 to 3;5 years of age.	**Morning sessions Monday to Friday** 9.00 am arrival; welcome, free play (1 teacher inside, 1 outside, 1 roving). 10.00 am morning tea 10.15 am mat time 12.00 noon depart. **Afternoon session Monday, Tuesday, Thursday** 1.00pm arrival; welcome, free play (1 teacher inside, 1 outside). 2.00pm afternoon tea 2.15 pm mat time 3.00pm depart.
Equipment: variety of activities readily available every session.	Inside activities: family; blocks; puzzles; jig saws; dough; books; collage; drawing; science activities; computer. Outside activities: tractor; swings; slides; climbing structure; water; large sand pit; carpentry; tricycles; painting easels.
Whole centre planning	The three staff members each take responsibility for a "whanau group"; the 45 morning children are divided into three groups, which meet informally each day for specially planned activities. This is one way in which the teachers manage the task of getting to know each child's interests and strengths, and maintain records of them.
Individual planning	Children observed in cycles; each teacher responsible for observing and planning for 1(morning) child at the beginning of each cycle.
Group planning	Activities based on the observations of individual children. Children encouraged to continue with activities across sessions as long as they are interested and to return to them at a later date. Projects involve small groups of children, though develop around the interests if individual children.

Team philosophy:

The teachers in this team had been recently involved in rewriting their philosophy, based on the Principles of Te Whaariki; Empowerment; Family and Community; Relationships; and Holistic Development.

"To involve the community in the programme, and in decision-making as much as possible. To clearly encourage mutual respect between staff, parents and children, with

the children's autonomy a priority. The children are encouraged to be assertive, stating their own concerns and requirements to each other, with adult support only when necessary" (Pilot kindergarten documentation).

Assessment, planning and evaluation procedures

During 1995 and 1996 staff reflection on planning procedures resulted in a major shift of planning focus. Working within the model of action research, the team had developed a system of planning based on:

- Maintaining profiles of individual children.
- Choosing 3 focus children each fortnight, with which to commence the cycle of observing, writing specific learning outcomes, planning activities around these outcomes, to include groups of children. 15 children were in the cycle at any one time, with the flexibility available for the addition of a further few should more urgent requirements become apparent for children not currently in the cycle.
- Evaluating achievements of the learning outcomes, and writing longer-term goals for the focus children, to be met within the core curriculum plans.
- Identifying a clear expression of the core curriculum, with a cycle for regularly evaluating each aspect of it with a view to updating and improvement.

Observation of one child

James (and D.) were observed by all three teachers during the week of 7-11 October, 1996. Teachers were especially interested in identifying possible schema that these boys might be working on. Their types of observations included incidentals, event recording, anecdotal, and narrative (the latter especially in discussion with the parents of the boys).

16.10.96 J. and D, both 4 year olds, had not played together very often prior to the one week observation of them both. Each spent their session times in large muscle physical activity, especially dashing around the centre, inside or outside, pulling large trolleys or trucks. Neither had engaged in any artistic representation of their activities, such as in collage, or art or drawing of any description. Both seemed to be working on a possible schema, generally labelled as "transportation", and "enclosures" - evidence of this was their play with the trolleys outside, and with the Lego blocks and large wooden blocks, inside.

The learning outcomes written for James	*Learning experiences planned to fulfil learning outcomes:*
James will be provided opportunities to: 1. Make or draw his own truck. 2. Draw his own map. 3. Build ramps from various materials. 4. Use a pulley to lift heavy loads.	1. Drawing and construction experiences during "whanau time". 2. The provision of truck books, such as "Big Machines" 3. Set up the pulley with James 4. Provide materials for ramps (blocks, boards, etc).

Enter researcher to engage in pilot study.

The above observations, learning outcomes and learning experiences were written quite independently of the pilot study, though they were the outcome of the teachers' work in their earlier professional development programme. I attended a session at the kindergarten on 21.10.96, during which the learning experiences written for James were being effected. Thus, during this week, all the staff members were especially aware of James' interests, and the plans they had written for him. Any learning being scaffolded for James would predictably be at its peak during this week.

Activities of researcher during pilot study:

1. Video recording

The subject of the recording (the child being observed), or the adult interacting with the child, wears a small radio-controlled microphone, which clips onto the front of the wearer's shirt. This provides a very clear sound record of the wearer, and of others in the nearby vicinity, regardless of the viewfinder record; extraneous noise is minimised - an essential factor for any sound recording in an early childhood centre. Thus, the video-recorder itself can be minimally intrusive, and kept at a distance from the scene being recorded (in fact, the scene and the video camera can be at opposite ends of the centre, and the sound will remain clear, with the clarity of the picture dependent only on a clear viewing path and the degree of magnification of the recording).

Permission to record video observations during the kindergarten sessions had been obtained from all the parents during their enrolment procedures. In addition, for the purposes of this study, explicit permission was gained from James's parents in particular, and from the staff members, in writing, and all the parents of children in the session were informed that video recordings would be made during that session, via a notice on the door.

In this pilot study I had no set time for recording in mind, other than to be present for as long as necessary during one session to obtain data on James in interaction with other children and/or with staff members, for later analysis. In fact, a 20 minute period of observation provided ample material. During this period a staff member (two of the staff present were involved) was working almost continuously with James.

Following the morning tea, I gave James the opportunity to become accustomed to the video camera, and to wearing the microphone, during a quiet time inside. He wore the radio-microphone during his subsequent play, for as long as he was comfortable doing so, at which time the staff member currently working with him was requested to wear it.

The sequence and length of James's play recorded was not pre-planned for the recording session. The activities James was engaged in during the recorded session were those planned for that week within the centre's cycle of planning. The staff members were keen to have access to transcripts of the dialogues recorded, to utilise in their planning processes. They were requested to interact with the children as if the video were not present; while it is acknowledged that this is an impossible request, in fact, the children seemed to, and the adults report that they, became hardly aware of the presence of the microphone or the camera, as they engaged in their interactions

2. Staff Reflection on Video Recording:

The staff member involved in the interaction with James, which became the data for this study, viewed the sequence immediately prior to being interviewed. Ideally, this interview would have occurred within a week or so of the video recording being made, although in this pilot study the interval was lengthened considerably through the intervening Christmas break.

The purpose of the interview with the staff member was to identify her awareness of the process of scaffolding children's learning, the techniques she consciously utilises in this process, and the sources of her ideas and beliefs about scaffolding learning. In addition, the process of this interview encouraged further reflection on practice, and was likely to contribute to the change process for the centre.

3. Data Analysis

The transcript of the 20 minute observation was analysed for examples of techniques of scaffolding, as below. This chart has been developed by the author from a variety of sources, notably Elliot, in Fleer (1995).

Video observation - Scaffolding of Learning Observed

Observed activities: For the interval of the 20 minutes James was engaged in interaction with one staff member (intermittently, as other children were attended to simultaneously). One other boy was present throughout and several other children came and went. The activities included: drawing a plan, using chalk on concrete; practising tying knots, in order to tie a string to the handle of the wagon, for pulling it, then later for tying the load on to the wagon; discussions about the directions of the roads, both outside of the kindergarten and within it; fantasy play with fish and chips being eaten; running around the track with the loaded wagon.

10.20: Winifred (teacher) and 2 boys:
- *Working with wagons, discussing roads and directions*
- *Tying string to wagon*
- *Boy 1 pulling wagon by string*
- *James tying string*
- *Winifred discussing getting stuck; dumps;*

10.29: Playing with ramps
10.30: Girl1 telling them how to do it. Boy 2 suggests using road signs.
10.32 Ramps suggested again, by Winifred
10.33 Discord averted
10.34 Tying knots
10.35 Loaded wagon being pulled
10.40 End of observation

SCAFFOLDING LABEL	EXAMPLE OBSERVED
Joint problem-solving: (verbal), goal identification, forward planning, rationale for decisions, revising. evaluating and checking outcomes, suggesting possibilities (physical, non-verbal)	11111 111 11
Developing intersubjectivity: Extending child's interest and making links to related activities or ideas; Entering child's fantasy play	11 1
Showing warmth and responsiveness: Giving positive feedback on cognitive activity. ("that was great thinking") Acknowledgement; friendly	1 1
Keeping child in ZPD: self-scaffolding; child repeats or extends newly learned behaviour peer scaffolding; child copies or extends another child's activities adult supports peer scaffolding verbal cueing; adult has possible response in mind Physical cueing Encouraging risk-taking Reducing frustration Directing attention to narrow range of features and alternatives within task Open-ended questions(no particular response in mind) Teaching and modelling skills and strategies In-depth dialogue Peer tutoring	1 11 1 1 1 1 111 1 1 - 11 - 111
Promoting self-regulation: Encouraging autonomy by withdrawing support, on evidence of growing independence; Monitoring; (no interaction-observing for appropriate intervention)	 1
	TOTAL: 28

Figure Tally of variety of scaffolding behaviours during the 20 minute pilot centre observation. Developed from Elliot (1995a, pp.23-34).
NOTE: each different action is scored only once, in the most appropriate category.
Longest period of concentration of child, supported by adult, on one activity: 20 minutes, and continuing at end of observation

Selected examples of teacher's verbal scaffolding, which rated a score on the checklist:

(i) extending child's interest and making links to related activities or ideas
The child has been supported in tying string onto the handle of the wagon.

W (adult): What are you going to use it for, I wonder?
James (child): No reply
W.: So is it there for if you get stuck again, is it?
James: Yep
Winifred: So it's like a safety rope, isn't it?
James: Yep
Winifred: Does Dad have a tow rope in his truck? In case he gets stuck?
James: No, he hasn't got a truck. He has a motor bike and he gets stuck. We took the motor bike up in the mud and the motor bike got stuck down in the mud.
Winifred: So how did he get it out?
James: He pushed it and he pushed it that's how he did it.

(ii) supports problem-solving (physical, non-verbal)
Child has indicated he needs some string
Winifred: you need some string as well, do you?
How long do you want it?

You cut it while I hold it tight, like this.
Oh, there you go.

(iii) Reducing frustration: as in vignette at beginning of this appendix.

Questions Raised By the Pilot Study:

- Given that the video-recorded observations were conducted during the week of executing the plans written specifically for James, how typical is the scaffolding of his learning as compared with other weeks in the year? Videoing James interacting with teachers at other times of the year than during "his" week would have provided some indication of the answer to this question

- How relevant were the learning outcomes written for James, and the activities developed from these, for James? Observation of James, again when he is no longer a focus child, would provide some indication of the ongoing nature of his interests/schema, and whether or not the teachers captured his ongoing interests.

- Discussions with James' parent(s), to ascertain links between James' home, and centre, interests and achievements, would be useful to answer this question. The identification of schema, which James may be currently working on, which would be likely to be congruent between home and centre, did, in fact, occur.

- How relevant were the plans for James for the other children in the groups which engaged in them? Observations of other children would have answered this question; in fact, there is ample evidence on video, of other children's learning being scaffolded along with James'. Also, of course, when James is observed as a non-focus child, this question will be answered in terms of plans written for other children being relevant for James' learning.

- In utilising the video camera for data collection, it was important to allow each child who was to be the major subject during a recording session, to be provided the opportunity to become familiar with the camera, and with the microphone. Other children in the sessions being videoed also required some familiarity, with both the researcher presence and with the equipment. The focus children were given the opportunity to view their recorded sessions, as were their parents/whanau.

Appendix C
NUDist Programme Information

APPENDIX C1

ABOUT NUDIST

NUDist (Non-numerical Unstructured Data Indexing Searching and Theorising) (Qualitative Solutions & Research, 1997).
NOTES FROM NUDIST 4 HELP: CONTENTS FILE

This is a computer package designed to aid users in handling non-numerical and unstructured data in qualitative analysis. NUDist does this by supporting processes of indexing, searching and theorising. A NUDist project is the product of the researcher's knowledge and organisational and analytical skills. NUDist creates an environment to store and powerfully explore data and ideas, to minimise clerical routine and maximise flexibility, and to discover new ideas and build on them.

Qualitative research uses a range of ways of discovering and exploring the meanings of unstructured data. NUDist was used in this project for

- Managing Documents
- Creating Ideas and Managing Categories

The three goals of NUDist used were:
QSR NUDIST manages data documents such as:

- Text transcripts of unstructured conversational interviews, evidence transcripts, personnel records, field notes.

QSR NUDIST created an environment in which ideas and categories were created, managed and explored, minimising clerical routine and maximise flexibility.

- explore documents, creating categories and coding texts;
- manage and explore ideas about the data;

A QSR NUDIST project is organised in two interlocking sub-systems, linked by search procedures:

The Document System contains information about every transcribed document in the project

- By exploring and coding documents, I used them to develop categories made in the Index System.
- The Index System is made up of nodes, which are containers for thinking about the project. Nodes store the index categories constructed by the user. With the category is stored information such as the title and definition of the category, a memo of ideas about it and references to the parts of documents coded at the node.
- By exploring nodes, and the coding at them, I used them as links them to documents.
- The search procedures allowed a search either document text or coding at nodes to discover and explore patterns and themes, and construct and test theories.

Most qualitative researchers are assisted by developing a system of categories for thinking about their data, and by organising it to some extent as their understanding

develops. QSR NUDIST offered many ways to help create an Index System and explore and change it as the project advances.

The Index System is the container for the nodes. Nodes stored in the Index Tree are organised with numerical node addresses.
Each node in the Index Tree is given a node address to represent where it is .
The address of a node assists in developing a mental map of categories, and in accessing them quickly, which matters for fluid and swift coding processes.

The tree display and the node explorer are the predominant tools for viewing and manipulating the index system.

APPENDIX C2

DOCUMENT LIST OF ALL TRANSCRIPTIONS CODED FOR ANALYSIS

Q.S.R. NUD.IST Power version, revision 4.0.

DOCUMENT LISTING: List of all transcriptions that have been coded for analysis during the research

1: 10_3_98 Manuka discussion	27: HAJoshdial.12.4.99.jochLizarddoc
2: 13_5_98 discussion with Manuka s	28: HAparents
3: 25.3.98 (listed as 9.3.98) discu	29: HAplansB&C
4: Annabelle	30: HAProfDevelProg
5: chleo2.txt 9.3.98	31: HArefl.on using audio
6: followup Manuka 23.2.98	32: HAreturning to same idea
7: implementation observs (Kaleb, Th	33: HASESS30.4.99concrete
8: interview 1	34: HAsessBrainHake
9: TERRACEhair	35: HAsessBrainTom
10: TERRACEMAPMAK1	36: HAsessSOPHIEbrain
11: TERRACEMuffins	37: HAteachrReflection
12: TERRACEstaffMtg21.6.99doc	38: Hawinemaking
13: Kaleb	39: Manuka 24.6.98
14: listen1	40: Manuka parent interviews 97
15: Lauren2.txt	41: Manuka23
16: Lauren_Susan2.txt	42: MakSessFS1
17: HA.C'KaUM	43: Manuka
18: HA.J&Sreflecting	44: observ Manuka Sept 97
19: Ha1stIntJSSIB	45: KAInt15.4
20: HA23.4.99discussion with teacher	46: KAInt16.3
21: HA23.4.99sess	47: KAInt31.3
22: HaCAMPfirst day	48: KAInt5.3
23: HACmakingConcrete.15.6.99++doc	49: KAInt6.11
24: HAcommonGoals	50: KASESS1
25: HAFacilitator's summary	51: KAsess16
26: HAJ&Srefl	52: KAsess2
	53: KAsess25

APPENDIX C3

EXAMPLE OF CODING STRUCTURE UNDER NODES AND SUB NODES

(6 1) /Propositions/Coconstruction Definition: Coconstruction of learning with young children requires the use of many specific and deliberate interactive skills - and these are qualitatively di Created: 9:55 am, Jun 15, 2000. Last modified: 3:01 pm, Mar 4, 2002. The siblings of this node are: (6 2) /Propositions/Supporting processes (6 3) /Propositions/Collaborative dialogue (6 4) /Propositions/Coconstruction of research The children of this node are: (6 1 1) /Propositions/Coconstruction /scaffolding learning (6 1 2) /Propositions/Coconstruction /adult-child interactions (6 1 1) /Propositions/Coconstruction /scaffolding learning Definition: scaffolding learning for children is qualitatively different from coconstructing learning with children Created: 10:04 am, Jun 15, 2000. Last modified: 11:37 am, Jul 2, 2000. The siblings of this node are: (6 1 2) /Propositions/Coconstruction /adult-child interactions This node has no children. Documents coded by this node are: 1: HA23.4.99sess This is 1 document out of 53, = 1.9% This node codes 1 document. (6 1 2) /Propositions/Coconstruction /adult-child interactions Definition: Specific interactions of coconstruction between adults and children Created: 10:06 am, Jun 15, 2000. Last modified: 8:55 pm, Mar 27, 2003. The siblings of this node are: (6 1 1) /Propositions/Coconstruction /scaffolding learning The children of this node are: (6 1 2 1) /Propositions/Coconstruction /adult-child interactions/dialogues (6 1 2 2) /Propositions/Coconstruction /adult-child interactions/revisiting ideas (6 1 2 3) /Propositions/Coconstruction /adult-child interactions/across activity settings (6 1 2 4) /Propositions/Coconstruction /adult-child interactions/chn thinking	ON-LINE DOCUMENT: HA1stIntJSSIB +++ Document Header: Facilitator B = Barbara G = Group 1st = First Speaker S = Sharon +++ Retrieval for this document: 240 units out of 1145, = 21% ++ Units:397-443 447-493 736-868 974-986 +++ ON-LINE DOCUMENT: HA23.4.99sess +++ Document Header: No Header +++ Retrieval for this document: 114 units out of 292, = 39% ++ Units:79-92 118-148 195-263 +++ ON-LINE DOCUMENT: HACmakingConcrete.15.6.99++doc +++ Document Header: No Header +++ Retrieval for this document: 48 units out of 109, = 44% ++ Units:62-109 +++ ON-LINE DOCUMENT: HAJoshdial.12.4.99.jochLizarddoc +++ Document Header: No Header +++ Retrieval for this document: 76 units out of 76, = 100% ++ Units:1-76 +++ ON-LINE DOCUMENT: HAreturning to same idea +++ Document Header: +++ Retrieval for this document: 218 units out of 246, = 89% ++ Units:11-184 203-246 +++ ON-LINE DOCUMENT: Manuka parent interviews 97 +++ Document Header: p 13 of field notes Interviews with Lexie (Kaleb's Mum) Wallace (Tim' Mum) and Daryl (Joan's Mum) during week of implementation, and again 1 month later +++ Retrieval for this document: 13 units out of 383, = 3.4% ++ Units:201-213 +++ ON-LINE DOCUMENT: MakSessFS1 +++ Document Header: Transcript of Susan audiotaped full session 2.12.97 +++ Retrieval for this document: 26 units out of 1609, = 1.6% ++ Units:85-95 194-208

APPENDIX C4

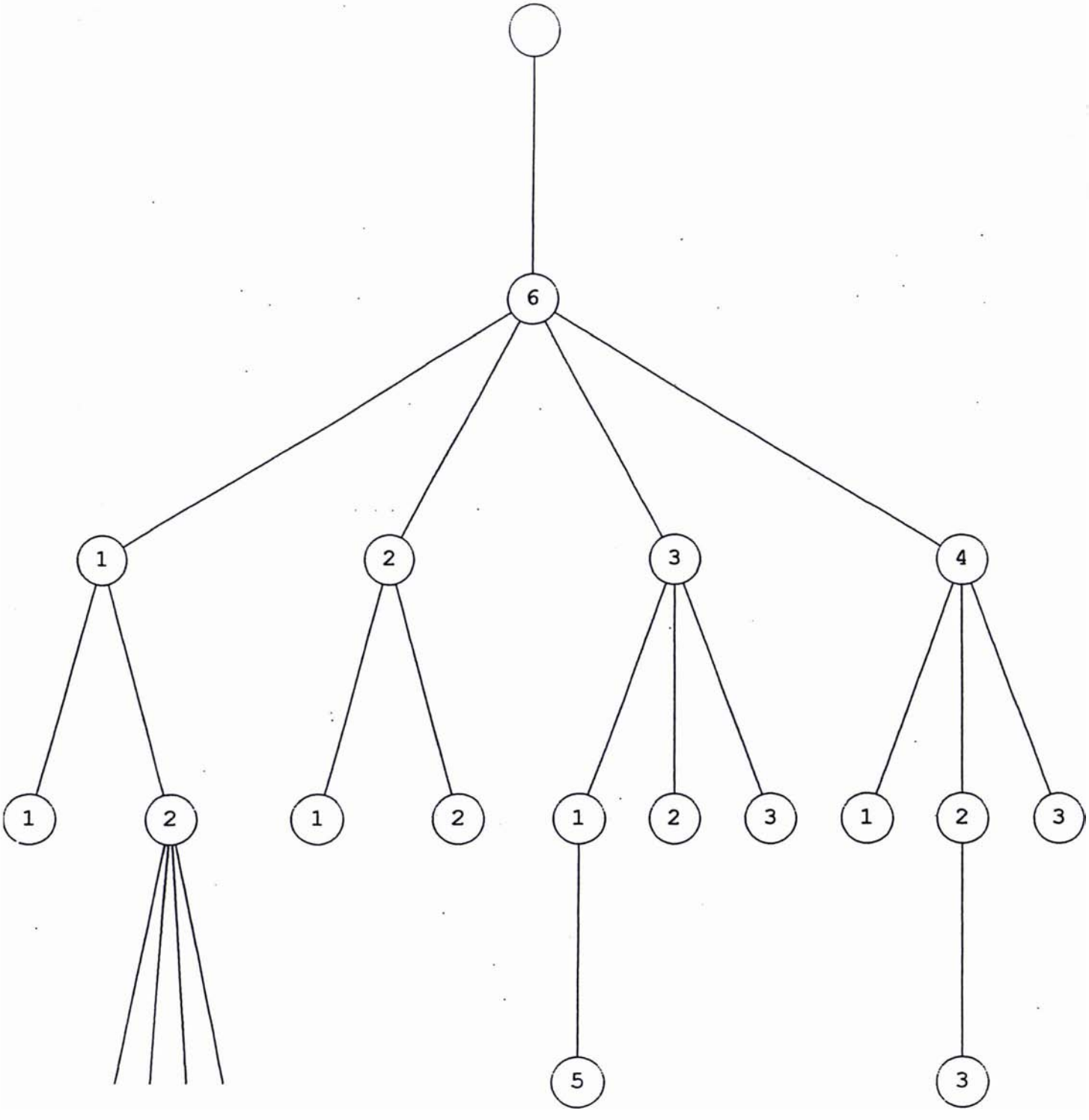
EXAMPLE OF TEXT UNITS IMPORTED INTO NUDIST PROGRAMME

+++ ON-LINE DOCUMENT: Ha teachrReflection
+++ Retrieval for this document: 18 units out of 34, = 53%
++ Text units 1-18:
Haven interview with Lulu Joy and Sharon 5.5.99 1
2
When we first made concrete with the children we thought it was going to be 3
disastrous!! But we changed our thinking to not worry about the to expect, to focus on 4
what was happening for the children eg Sharon on Friday experienced lots of water 5
going into the concrete. The concrete set but the children could break it by standing 6
on it (compared this with ordinary concrete). 7
Brierly: there was too much water in it. 8
Brierly had just done her own recipe for baking. With a choice of ingredients, she 9
knew she needed more milk. 10
Cyril made huge biscuits, with the perfect amount of ingredients. Then made 11
recipe cards for his creation. Thought they were "cool". In the sand pit, Cyril was 12
making vineyards and wine. 13
Brierly tried putting fijoas into her recipe; the product was very solid! 14
The children decided that they needed a recipe for concrete. 15
Judy wrote the recipe out 16
Children kept piling sand in, with less cement than was required. They realised that 17
they had not followed the recipe. 18

APPENDIX C5

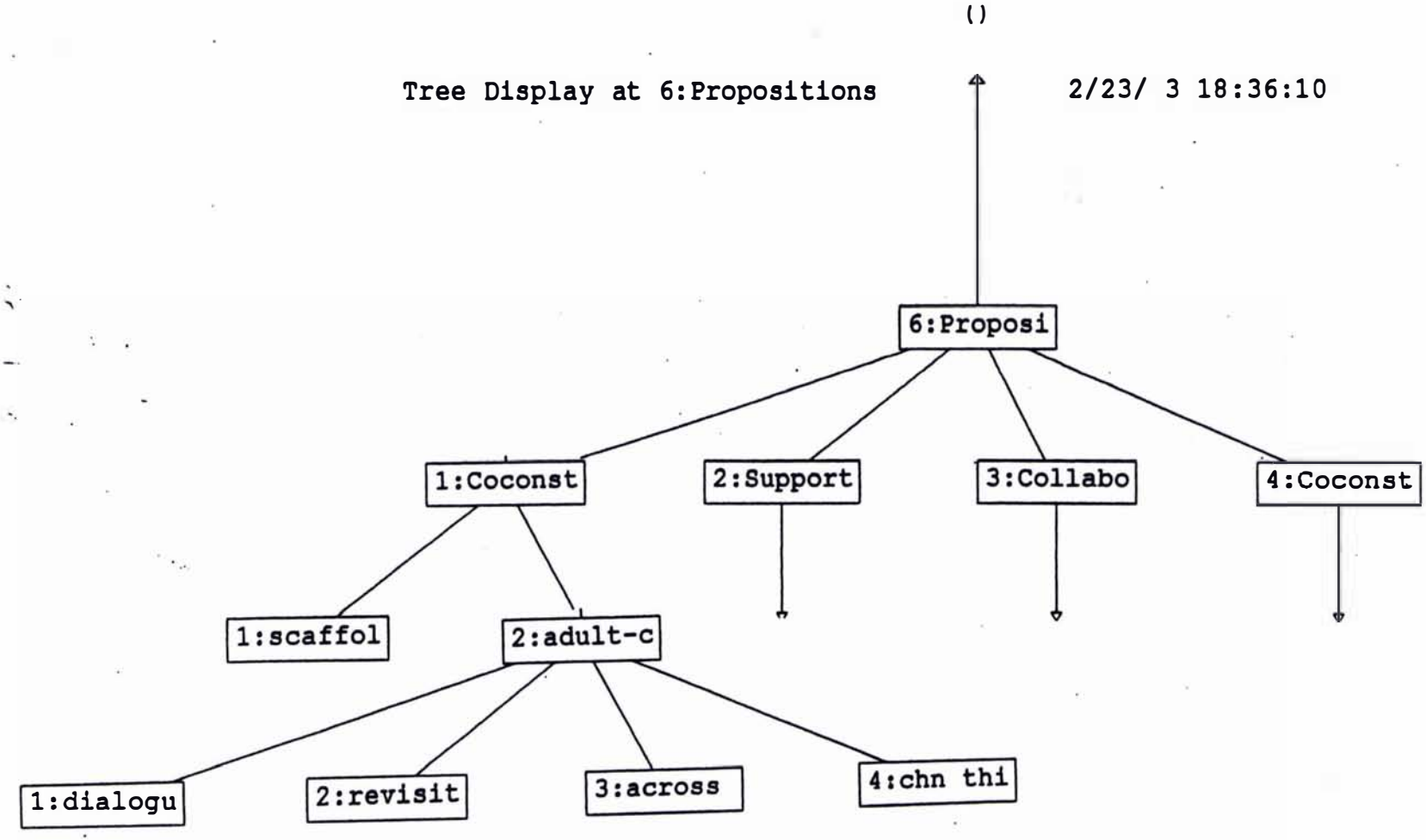
EXAMPLES OF TREE DISPLAYS AT VARIOUS NODES AND SUB-NODES

Tree Display at <Root> 3/27/ 3 23:08:40



APPENDIX C6

TREE DISPLAY OF DEVELOPING EVIDENCE FOR PROPOSITIONS


()
Tree Display at 6:Propositions
2/23/ 3 18:36:10
6:Proposi
1:Coconst
2:Support
3:Collabo
4:Coconst
1:scaffol
2:adult-c
1:dialogu
2:revisit
3:across
4:chn thi

APPENDIX C7

EXAMPLE OF DEFINITIONS AT NODES

```
* (642).txt            page: 1            3/27/ 3 20:51:16

Q.S.R. NUD.IST Power version, revision 4.0.
Licensee: David Stewart.

PROJECT: PhD, User barbara, 8:49 pm, Mar 27, 2003.

************************************************************************
(6 4 2)                  /Propositions/Coconstruction of research/working w
*** Definition:
Results and issues of working with a facilitator
*** Created:       12:16 pm, Jun 15, 2000.
*** Last modified: 11:37 am, Jul 2, 2000.
*** The siblings of this node are:
(6 4 1)                  /Propositions/Coconstruction of research/change in
(6 4 3)                  /Propositions/Coconstruction of research/observer
*** The children of this node are:
(6 4 2 3)                /Propositions/Coconstruction of research/working w
*** Documents coded by this node are:
1: 10_3_98 Manuka discussion 2: HA.J&Sreflecting 3: HA1stIntJSSIB 4: HA23.
5: HACmakingConcrete.15.6.99++doc 6: HAFacilitaro's summary 7: HAProfDevel
HArefl.on using audio
9: LUreturning to same idea 10: LUteachrReflection
*** This is 10 documents out of 53, = 19%

This node codes 10 documents.
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Appendix D

Records of professional development

APPENDIX D1

RECORDS OF A PROFESSIONAL DEVELOPMENT SESSION

Massey University College of Education
Te Kupenga oTe Mātauranga

Early Childhood Professional Development Contract 1999

FACILITATOR PLANNING & REPORTING FORM
(Copy to Director)

Centre/Service Name: ______ **Address:** ______

(Please circle which Type Programme) ***Seminar** ***Whole Centre** (circled) ***Individual**

Seminar CODE & Title: ______ **Facilitator Name:** ______

Date of Session:	10.5.99
Session Number:	four
Type of Session:	Final ☐ Follow-Up ☐ Completed ☐
Time of Session:	5.15 - 745
Duration of THIS Session:	2½
Total Hours PRIOR to this Session	6½
Total Hours INCLUDING this Session:	9
Total Number People Attended this Session	2

Name/s of Those in Attendance (Attach list if needed)	Designation (Please tick) Management	Educator	Parent
	✓	✓	
		✓	

Facilitator's General Comments:

2 questions arose for the teachers after discussion with their facilitator and Barbara.

1). Were we concentrating too much on chn's interests in our observations and missing out on opportunities to develop a greater understanding of what chn. are thinking?

2). Is the opportunity lost once the conversation has finished?

Note: Theory of mind
Metacognition

Facilitator-PlanReport.doc

Please turn over...

Interim Task Reflection

Aims for This Session	**Outcomes for This Session**
To set up videoing and recording equipment	-Recording sussed - experience will tell
To: check re Barbara talking to parents / telephone or meeting	- Parents ask re phone contact.
: Take transcription of last session	- Transcription not ready
To collect documentation of changes to date eg session programme and links to individual work ie observations, any other recorded records etc.	- Staff are reflecting on practice and questioning techniques being used
To leave readings for further discussion : Thinking for themselves : Scaffolding Young Chn's Learning in EC Settings : Staff interact with chn to stimulate curiosity + thinking : Socially Constructed Learning	- Excited to have readings to link theory to practice
Answer questions etc re events to date	✓
Book next session	

Interim Task for Next Session:	**Next Session:** Review Videos/Audio and plan for the 3 children
Video and Record Selected Children	**Date:** 10.6.99 **Time:** 5.15 – 7.15
Read Readings	**Venue:** Centre
: . · get transcription from Session 1 Contact Barbara re third child.	

Please turn over ....

FacilitatorPlanReport.doc

APPENDIX D2

PROFESSIONAL DEVELOPMENT IN CASE STUDY CENTRES.

The following key to Figure 4.4 identifies the several components in the programmes of professional development.

Centre codes	Activity	Participants	Text units
M:Manuka Centre K: Kauri Centre T:Terrace Centre H: Haven Centre	Int: Interview (either by phone or face to face). Obs: Observation during session at a centre	T: Teacher P: Parent	Unit: a text unit in the NUDist programme.

A normal text unit in the NUDist programme is one line of text. Since all of my recorded texts are of dialogues, with children or with teachers, each line begins with a pseudonym. If the subject then spoke only one word, this would be counted as a full text unit; on the other hand, one utterance might be of say 50 words, which could translate into 5 text units. Thus, the number of text units recorded is in no way intended as a qualitative measure; they are provided only as an indication of the method and depth of dialogue analysis.

Thus the code: "20.10.97; MIntT; 2 hrs. discussing dialgs; 385 text units" provides the date of an interview with Manuka teachers that lasted two hours, included a discussion of teacher-child dialogues, from which a transcription of 385 text units was made.

All of my own professional development work with the teachers was recorded (other than when equipment failure precluded this) and transcribed. However, because the teachers themselves provided many of their dialogues with children, and some of these were hand-written, Figure 4.4 does not include numbers of text units for every date of professional development.

Manuka: 45:45 public kindergarten; 3 teachers.

Type of Professional Development	Meeting with researcher and teachers	Observations (video, audio) and teacher-child dialogues transcriptions.
Date Hours Topics Code in NUDist No. transcribed text units	Sept. 97; 2 hrs introductory. MTInt. 20.9.97; MIntP; 2 hrs. 383 text units. 20.10.97; MIntT; 2 hrs. discussing dialgs; 385 text units. 10.3.98 MIntT; 2 hrs discussing dialgs.; 383 text units. 25.3.98; MIntT; 2 hrs all those other things in our lives; 424 text units 13.5.98; MIntT; 2 hrs garden footprints; 389 text units. 24.6.98, MintT;2 hrs. changes made; 855 text units. 23.10.98MIntT; journal article; 17 text units.	MObs12.9.97; 19.9.97; 22.9.97; 5 hrs. 353 text units. MObs20.10.97; full session, (385 text units). MObsS2.12.97; S full session; 675 text units. MObs 23.2.98; full session; 67 text units. 2.98 MObsT; L's dialogue; 85 text units + 397 text units MObs9.3.98; hospital; money; 521 text units.
Total hours PD Total transcriptions of text units	Hours meeting with teachers = 14 hrs No. text units of teacher-researcher dialogue transcribed = 2836.	Sessions observations = 14 hrs. No. text units of T-Ch dialogue transcribed = 2098

Figure 4.4a Manuka's programme of professional development

Kauri: Private Christian kindergarten; 2 teachers

Type of Professional Development	Meeting with researcher and teachers	Observations (video, audio) and teacher-child dialogues transcriptions.
Date Hours Topics Code in NUDist No. transcribed text units	6.11.98; 2 hrs; introductory. KKIntT; 255 text units 16.11.98 KKIntT; 2 hrs.; discuss video; Trans:319 (combined with obs) 5.3.99: KKIntT; 2 hrs; view video of 26.2; 57 text units 16.3.99; KKIntT; 2 hrs; 255 text units 31.3.99; KKIntT; 2 hrs; 135 text units 15.4.99; KKKInt; 2 hrs; 101text units.	KKOb 2.11.98; full session; focus chn; Trans:142 text units KKOb 10.11.98; full session; focus chn;; Trans:226 text units KKOb 16.11.98; full session; focus chn;; Trans:319 text units (combined) KKKObs; 25.2.99: Full session focus chn; Trans:203 text units. 26.2.99: provide photos for teachers during session. 10.3.99: Video M.
Total hours PD Total transcriptions of text units	Hours meting with teachers = 12 hours No.text units of teacher-researcher dialogue transcribed = 953 (approx).	5 full (3 hour) sessions observations = 15 hours No.text units of T-Ch dialogue transcribed = 740 (approx).

Figure 4.4b Kauri's programme of professional development

Terrace: Large community childcare centre

Type of Professional Development	Meeting with researcher and teachers	Observations (video, audio) and teacher-child dialogues transcriptions.
Date Hours Topics Code in NUDist No. transcribed text units	8.3.99; TInt; whole centre team; introductory; 1/2 hr. 22.3.99; TInt; w 3 teachers; 2 hrs. 10.6.99; TInt. w 2 Ts; 3/4 hr. 16.6.99; TInt. w M; 1 hr. 21.6.99; TInt; whole centre team; summary findings; 1 hr. 29 text units	 TOb10.5.99; hair; Full session; 311 text units. TOb; 3.6.99; muffin making; full session; 515 text units TOb; 16.6.99; map making; full session; 47text units
Total hours PD Total transcriptions of text units	Hours meeting with teachers = 4.5 hrs. No.text units of teacher-researcher dialogue transcribed = v. little. Hard copy notes preferred + problems with recorder on 3 occasions.	Sessions observations = 9 hrs No.text units of T-Ch dialogue transcribed = 873

Figure 4.4c Terrace's programme of professional development

Haven: Small private childcare centre

Type of Professional Development	Meeting with researcher and teachers	Observations (video, audio) and teacher-child dialogues transcriptions.
Date Hours Topics Code in NUDist No. transcribed text units	25.2.99; 2 hrs w teachers +facilitator + researcher; introductory; 712 text units. Hgoals; 33 text units 24.3.99; 2 hrs w teachers +facilitator; left readings. HIntT23.4.99; 4 hrs. w teachers +facilitator; video analysis; 135 text units. HintP5.5.99; my int. w 3 parents x3; 122 text units + 26 text units. 10.5.99; 4 hrs w teachers +facilitator; reflection on video HFacilitator summary; 82 text units HTsummary; 41 text units. 20.7.99; 2 hrs; 2 hrs w teachers + researcher; share model; hard copy. HTs reflecting; 34 text units.	HOb5.1.99 concrete making. HOb?.?.99; C's 1st day at Kind. HObs23.4.99; J working w C at blocks; 292 text units. HObs3.99; S&brain; 55 text units HObs3.99; T& brain. 50 text units HObs4.6.99; L& brain. 35 text units HOb12.4.99. J & lizard; 76 text units. HOb, plans for C &B. Hard copy. HOb30.4.99 concrete making. HOb 1.5..99 concrete making HObs15.6.99; concrete making; 109 text units.
Total hours PD Total transcriptions of text units	Hours meeting with teachers = 14 hrs No.text units of teacher-researcher dialogue transcribed = 1185	Facilitator observations + teachers records No.text units of T-Ch dialogue transcribed = 325 text units +++

Note: The figures for Haven's records are approximate only due to the large amount of hard copy information provided that has not been transcribed into the NUDist programme. Many of the facilitator-teacher sessions were not recorded, though excellent records were maintained of the topics of discussion and the outcomes of sessions, for the teachers and for the facilitator. Many of the observations of teacher-child dialogue were recorded by the Haven teachers themselves; these records are very focused, recording only dialogues in which the teachers were especially interested.

Figure 4.4 c Haven's programme of professional development

Figure 4.4: Details of the programmes of professional development in the four case study centres.

In addition to the above records I interviewed by phone the parents of the focus children in each centre during the week in which plans were being implemented specifically for them.

APPENDIX D3

SAMPLE TRANSCRIPTION OF TEACHERS' DISCUSSION WITH FACILITATOR

25th March, 1998: Discussion with Manuka teachers, Susan, Chloe and Lauren, with Barbara as their facilitator

Barbara: Got to the end of the term.
Susan: Honestly, two weeks to go and we've just got this backlog of work to do. And we've had all these other things going on in our lives.
Barbara: Yeah, I know. This is the reality of teaching, isn't it? It's not ever going to be different.
Susan: No. But I actually want to do that. But I actually don't want to do it this term.
Barbara: You personally?
Susan: Mmm.
Barbara: Yeah. Okay. So you want a chance to hear it and follow it up?
Susan: And I'd like to do some more reading before I go.
Barbara: With children.
Susan: I'd like to have, and there's no way I'm going to get through that. Like that's holiday reading.
Barbara: Yeah. I haven't read that whole book either.
Susan: No, but I'd like to read and then perhaps do a bit of experimenting.
Barbara: Yeah. Cos I guess I've got in the background that the sort of contents of that book, although I haven't read it all, I've been to the conference and I have in mind the sorts of things that they do at Reggio Emilia. There's a new word I came across. I don't know if you know the word, Telos. Have you seen it? I think it, it sounds Greek doesn't it? T-e-l-o-s and it, I think it, my interpretation of what it means is having I guess, the product, in mind. An outcome. And it's
been talked about in terms of researchers going in and participate research, well you as teachers with the children, having an outcome in mind that the children may or may not be aware of. But you've got a goal that you want them to get to.
Susan: Yeah.
Barbara: Which they're not aware of, but you think's important. Um, they talk about in terms of researchers having something in mind that people that they're participating in a research with may or may not be aware of. And I keep thinking do I have anything in mind that I would like to see you get to? And, in a way, it's fairly vague, but I, do you have a point in mind that you think you want to get to? I just wonder where we're at in terms of what I have in my head and what you have in your head? What do you want to be the outcome of this?
Lauren: I'd like to get into the projects and things. But the thing that I find hard is, who to get into them with? Like just this week I've had like heaps of opportunities to get into ongoing projects but it's just a time thing. And I know probably the ultimate thing would be to do it with the child in the planning cycle. But at the moment that's not happening with the child that I've got in my planning cycle. It's happening with other children.
Barbara: Because the one in the planning cycle doesn't talk as much?
Lauren: Mmm.
Barbara: Yeah. And do you each have ...?
Susan: He's just coming.
Lauren: He is starting to. I noticed that today too.
Susan: And that's a result of the planning cycle. His self-esteem's up. He's starting to say, oh, would you like to me help you with this kind of stuff.
Lauren: Yeah. But I'm just thinking of like, you know, a couple of examples this week. I could have definitely got into projects with children but they weren't in my planning cycle. And I'm just wondering how far do you go with each child, you know, looking at time ...?
Susan: And plus it's the physical thing, like you know, you can get into project over here with a little group of children but meantime over here somebody's sawing down a tree.
Lauren: Yeah.
Susan: And you have to, you can't totally switch out. I mean it would be so good to be able to do that and just focus in.
Barbara: Is that water running up there or that ...?
Susan: We're emptying the water trough.

Barbara: Oh, okay, it's okay. And how was it for you in terms of, I noticed in a transcription there of Chloe' work that there was one stage, I presume you were in the Science corner, Chloe and Susan was calling for you and you say, I can come if you want and you realise that Chloe was busy, so ...
Chloe: I didn't wipe anything and that big gap in the middle is the phone rung, a personal call for me, and I turned this off and I didn't turn that off.
Barbara: Okay.
Susan: Cos Chloe was resource that week and like the way that we work it is a child had actually hurt themselves outside and I came to the door with this child and I called Chloe cos that the role of resource. Cos Lauren you were busy with a group children down here, so I thought well, you looked busy. I didn't know what Chloe was doing so of course I yelled at her and she's got ...
Barbara: But I mean that's the sort of implication it has for the whole team if one of you is working on a project. Not just because it was being recorded but because you can't all be engrossed with a group of children at any one time.
Susan: No.
Barbara: And yet you can't timetable it, can you?
Susan: But we're, I think as a result of this, we've put this newsletter out to parents, haven't we? We've done that since Barbara was here last time, aye?
Chloe: Remember we talked about freeing us up more and using our parents.
Susan: And we've got parents coming every day. And we were specific, weren't we, on what we wanted.
Lauren: Yeah.
Susan: We said to them that we wanted to tape with children, we wanted to do profile work, observations for task cards and we named these things that we were actually doing with children and we said, we want you here to help with process cooking, screen printing, pushing children on swings, reading books and actually wrote the specifics.
Chloe: Cleaning the animal house which we thought nobody would do. And they're all rushing to do it.
Barbara: It's something they can do.
Chloe: Yes.
Barbara: You know, they don't have to worry about how they're working with kids.
Chloe: Mmm, yeah.
Barbara: Now you're going to have to have someone to supervise the parents.
Susan: No, well the jobs are quite specific.
Barbara: Okay.
Chloe: They're user-friendly. Like we've got parent-helper notes on the back of the process cooking so they all know what to do.
Barbara: So they know how to interact with the kids?
Chloe: And how to extend the children. Like we had these systems to allow that to happen but we've never fully utilised it. So now we just utilise it.
Barbara: With this group of parents. You know, a couple of generations ago they might have known they could do it.
Susan: And a lot of the parents that are coming to help are the parents of children that have been through planning cycles.
Barbara: Yes, okay.
Lauren: I think they are probably the ones that can see the work that we do.
Barbara: This is going to have all sorts of spin-offs, isn't it?
Susan: Mmm.
Barbara: Neat.
Susan: So maybe by next term we will be free. Like we're still going to have one in and one out and one resource but if we can get parents more involved that's going to free us up from the daily chores of like helping children through the process cooking and things like that. So that we can actually do more indepth work with children.
Barbara: So it's that working on, Lauren you say you want to work on projects, it's getting experience with what a project is and what happens to the children and work with and how to extend it within the limits of your time.
Lauren: Yeah.
Barbara: Chloe, you've, this became a project, a short one, didn't it?
Chloe: Mmm.
Barbara: A sort of follow-up because in there you said a lot, do you remember when?
Chloe: Mmm.
Barbara: And do you remember what we did and you were picking up on that all the time.

Chloe: Mmm.
Barbara: So what were the outcomes for you, do you think?
Chloe: Well it gave me an opportunity to really explore a part of the curriculum that I hadn't really taken time to do for quite a long time. Um, because we had an unspoken agreement that, you know, if you were doing the taping you could really just go for it, it was sort of an unspoken rule. But that's what we did. And, um, yeah it just allowed me to get engrossed knowing that I wouldn't be interrupted. It allowed me to work with that small group, cos there was a small group of children, not just Christopher or Kaleb.
Barbara: Mmm.
Chloe: And knowing that we could actually finish it or bring it to a state that we were satisfied with the outcome. Without thinking, oh, I've got to go and do those dishes, I've got to go a sticking plaster on I've got to go and do this, I've got to go and do that, that person needs me cos the phone's ringing, all that sort of stuff.
Barbara: Well that's always a strain to be there isn't it, it's got to be the, everything that you do happens in the whole social situation of what's happening at the kindergarten.
Chloe: Mmm, because nothing, because that experience didn't happen in a vacuum. Like it happened in amongst everything else that was happening in the centre on that day. Which, and the thing, an issue that I have is like, for example, there was a couple of children who came to me with what could have been potentially a project. Now, how fair is it to that child for me to deny them the extension I'm giving to this child just because I'm involved in something else at the time.
Barbara: Mmm.
Chloe: Like that is a dilemma, an issue but we're not superhuman and I can only do one thing at a time and ...
Susan: I thought you could do 10 things.
Chloe: You can tell me everyday that I can do everything at once, but I know. But it's that sort, those are the issues for me as a professional.
Barbara: Which is why, and being fair and picking, I wish all the children could have a turn, is why you'd focus on the children that are in the planning cycle at the moment and anyone else you can cope with.
Chloe: But because other children see, other children can see how that child you're focussing on it feeding off that attention, like they're absolutely, they thrive in it, um, and I think they seek it. And it's just bad timing for them. And they, you know, I keep thinking of like Filoaki, like she's in our face all the time, however she's obviously there because there's something there. Like, and I, yeah ...
Barbara: I know you've said, every time I say something has to change or something has to give, you say we've just got these planning cycle right, we're committed to this. Do you think there might come a time, if you got the projects running so well, that you might not need to put so much, quite so much emphasis on the individual cycles.
Susan: No, cos I think in, I think the cycles are really good because that's how we find out what children's strengths and interests are.
Barbara: That's how you get to know them in the first place?
Chloe: I agree with that.
Susan: Yeah.
Barbara: And the projects grow out of those, usually.
Susan: Mmm.
Barbara: Yeah they have, haven't they, the projects? Okay.
Chloe: And I think it's the, that individual planning cycle time, it's that intense time, that you, like we, if we went through all 45 children and had to rattle off stuff about them, we could. But it's those planning cycle children that we can rattle off more that's not just on the surface, it's ...
Lauren: And I think too, there's always the same children that get more attention probably than other children and doing the planning cycle, making sure that even those quiet ones don't get missed.
Chloe: Their special needs are fed in that way.
Barbara: I'm glad you're committed. I keep having in mind that now that the Ministry of Education who says, and I think even Helen May and Margaret Carr that they think the best way to go is planning for individual children. And I can't see that anything can be better. I really can't see how you can get to know all the children in your centre, with the ratios you've got, unless you have a cycle like that. So I'll keep asking. I'll keep asking about that.
Chloe: I do envisage a time when the system we have in place will evolve to something different or to something else other than what it is today. When I think about the type of planning that was taking place here at Manuka when I came here and to what's it's evolved to now.
Lauren: You know what it is. It's ratios. It's the only thing that can make it better.

Chloe: Yeah. It is ratios.
Lauren: Adult:child ratios.
Chloe: But like even systems evolve and change with new research and new styles when you get exposed to other people's views and how they are practitioners and that the more exposure we get to the different ideals the more our systems evolve. So I wouldn't say our planning cycles stay as it is now for eternity but I could see it will evolve, continue to change. It's continuing to change the whole time.
Susan: Yeah. The basis is there.
Chloe: Our philosophy, yeah. The building blocks, the foundations and what we believe are based on our team-philosophy but all you need is a new staff member with a new philosophy to act on that and it modifies it so it is continually evolving. That's quite different, it's quite different from when, you know, I first started.
Barbara: Since Susan first started.
Susan: It changes every year.
Chloe: Mmm.
Susan: Different staff, different dynamics.
Barbara: Yeah, cos one of the things that changed for me when I set out what I was going to do with the research, I was going to take three different children in the kindergarten and I envisaged them being in different planning cycles and then immediately I came it became obvious that the only way I could collect the data was to have the three children that were currently in the same planning cycle which made it feasible for everybody. For me to be collecting observations of those children and that's the first thing that comes to my mind, that I wonder if you're doing three children, at the moment you do one child from each whanau group that you're working on, and that might not ever change. But it might be that the three children that you choose might also be children that work together quite a lot.
Susan: Mmm.
Barbara: So if you're doing Kaleb, Chloe and Matthew ...
Chloe: Yeah, that's true.
Barbara: ... Kaleb and Chloe and Matthew and then the project you develop you'll all be working on because they all have similar sorts of interests.
Chloe: See. There it is.
Barbara: Yeah, it just might streamline it. I don't know. It's not always going to work because some children are individual and don't have particular friends but that's just something that changed for me in my research. What about, it seems to me that one of the things that, we say we want projects developed but thinking of what the outcome of a project is and what's happened for you with those children, Chloe, that you focused on getting to know what they're doing and exploring a topic with them.
Chloe: Cos it's the accumulation of lots of different dialogue over days because Christopher particularly is always talking about when he goes camping.
Barbara: Yes.
Chloe: He's always talking about Riverside, Riversdale?
Susan: Mmm, Riversdale.
Chloe: ... Riversdale, he's always talking about family holidays and Kaleb goes there with him and all sorts of things. So there was all sorts of influences why we decided to go back to the camping. And part of it was that you had it on video already. So there was that record of the dialogue and the experience and it would support me using this particular discussion point to extend on.
Barbara: And out of that came, the project of that day was really, then became making a torch.
Chloe: Yeah, making another useful camping tool.
Barbara: Yes. My thinking is what else could you do to go further indepth in what their thinking was.
Chloe: Mmm.
Barbara: You didn't like the stuff I brought last time. It fell like lead balloon on the table, so I didn't bring it this time.
Chloe: It's just way out there.
Barbara: No, the levels of thinking but, um,
Barbara: I was talking to Joy Cullen about how, what sorts of levels, what would be useful because it's got to be something that you can remember, that you have in your head and something to cue you into the sorts of questions that you can ask and the sorts of queries and directions you can go down.
Chloe: That's what you were doing today.
Susan: Yeah.
Barbara: What were you doing?
Lauren: Accessing information off the computer through an encyclopaedia about transmitters and microphones.
Barbara: Oh, okay.

Lauren: Cos that's his interest at the moment, isn't it?
Susan: Yeah.
Lauren: Microphones and ...
Barbara: And I think that's you learning your content knowledge because I'll show you my proposition, do you want to see what I'm going to do, I've got my seminar on Monday.
Chloe: I noticed this.
Barbara: Yeah.
Chloe: What you said and your body language were quite opposite.
Barbara: I know, I'll be glad when it's over. Would you like, we'll spend five or 10 minutes going through that we're doing with that.
Susan: Yeah.
Barbara: But one of my, out of the observations have developed some propositions which for me the propositions are a bit different from hypothesises in that they have really fallen out of the data. And they're propositions that I want to continually test and revise as other stuff comes in to see how real they are. Cos I'm wanting, what I am wanting is something learning with you people. Something that's going to help other teams to maybe take a few shortcuts because this is hard work, isn't it? And I think everybody probably has to do hard work, but we might be able to make it a bit easier, if you've been through and sorted out what it is you need to do to help kids, develop projects for children.
Susan: Mmm.
Barbara: And I think propositions might help to do that. And one of my propositions is that as soon as you get into dialoguing and having projects with children you're going to have to research your own knowledge base and the topics they're interested in.
Susan: Mmm.
Barbara: And that's time and energy.
Chloe: But we've got it at our fingertips.
Barbara: You've got it on the computer?
Chloe: Yeah, we've got it at our fingertips. But I didn't actually know that I had it at my fingertips until today.
Susan: Yeah, I didn't either. Because I haven't had time to play with that computer.
Barbara: So, what? You're on the Net?
Lauren: No, we've just got Encyclopaedia '97. So we've just gone through and ...
Susan: So anything that we want to know will be there.
Barbara: That's amazing.
Chloe: Remember, for example, I said about how Christopher made the microphone and the receiver at home.
Barbara: Yeah.
Chloe: Well ...
Lauren: That could be an excuse to get on the Net.
Barbara: Yes.
Lauren: Cos you can access all sorts of information, print it off.
Susan: Management plans to do this year.
Barbara: That's neat.
Chloe: About radios and frequencies and microphones and how a telephone works with speaking into it with a diaphragm and all those. The words that ...
Barbara: So it's in a language you can understand?
Chloe: Yeah.
Barbara: That you can ...
Chloe: I'm just going to highlight, well the key words are highlighted on the printer and I'm just going to highlight it and highlight the words that I'll be able to use to talk about it with him.
Barbara: Oh, okay.
Chloe: I'm not going to read it out but I'm going to ...
Lauren: It's for you.
Chloe: ... yeah, I'm going to sort it out into a package that I can then articulate to him.
Barbara: Yeah. One of the things I've found in the past when I do science workshops and staff learn some ideas that they didn't have before, sometimes what they do often become very didactic with children. They want to teach these new things that they've just learnt.
Susan: Mmm.
Barbara: So, if it's done alongside projects where you're using it to extend children's language.
Chloe: Mmm, and the information is then meaningful and it's fit in a context that's real.

Barbara: Yeah, right. With Joy I was talking about, do you know Marilyn Fleer's writings at all? She talks about technology. She's an early childhood person in Australia, Canberra I think.
Chloe: Yeah.
Barbara: Um, she does a lot of work in children's technology in early childhood centres and she's done that we tried with Thomas, was it, the planning and doing. George Foreman talks about discourse, um, design, discourse and documentation, the three Ds, he's the one that wrote that 100 Language of Children.
Susan: Mmm.
Barbara: But I like Marilyn Fleer's. She talks about, um, to do, to know, and to understand. And I think that's much better language. It's the doing and I think this is what's the level that's happening really well. The doing and the describing. And that's one of the levels of thinking as well. The describing and talking about and the making links with the camping and other things that is happening there very well. You know, I think the more that you get into projects, and the knowing as well, knowing how it works and knowing the parts and that, the encyclopaedia, for you to know more, so that you can extend them as well.
Susan: Yeah.
Barbara: I wonder about the understanding because I don't know still, even from that dialogue, I don't know, apart from the practical things that you can see the kids doing, you can guess what they can understand but I'm not sure what's going around in their heads. I'm still not sure what they understand about electricity, about what they understand about, I'm sure they do know what a torch is for, to help you see in the dark, if you ask those sorts of questions, but, um ...
Chloe: But do you think, so how do you know that the child wants to know that level of information? Do we assume that we just deliver it or talk about it and they'll take it in if they want to and they won't if they don't, sort of thing?
Barbara: I'm not saying that we teach them how to understand. I'm saying that the kids have already got ideas in their heads and you're not tapping them.
Susan: Mmm.
Barbara: I think they already have understandings.
Chloe: Okay, so we need to question further about what they know about how the electricity works.
Barbara: Yeah. So if knew what they understood then you could engage further with their minds. It's about engaging with their minds and what they're already thinking. And I think there's probably more levels that you could engage with.
Chloe: Mmm.
Barbara: There's neat stuff in there, at all those levels. And we can assume that they understand quite a lot about electricity but if you really found out because you got them to talk it then I think you would be able to work with their minds a bit more.
Chloe: Cos I don't know a lot either. I mean, I know electricity and blah, blah, blah.
Susan: determine if the batteries are flat. If they are, my dad's got a charger for batteries. So that's a level of understanding.
Chloe: See they ...
Barbara: Yeah.
Susan: So that's a level of understanding.
Chloe: That was Patrick. It wasn't Christopher. It was Patrick.
Barbara: That's where you need more information.
Susan: Well how does a battery charger ...? Yeah.
Barbara: You need more information, both about the topic that they're interested in like battery chargers and diaphragms and how sound is made and transmission and waves and those sorts of things. Until you've got that language you can't engage with their minds and find out what they think.
Susan: Mmm.
Chloe: Yeah.
Barbara: Aye?
Susan: And that goes back to, um, I remember way back at the beginning when you started you were talking about our culture. You know, who we were brought up and what we're interested in. And so we have to learn about the stuff that we don't know about.
Barbara: Mmm. And the difference between having a theme, you know the old days of planning round a theme in a kindergarten and now it's the same sort of thing but applied to the individual level and we've got to go and find out about topics we might not know much about.
Susan: Mmm.
Barbara: And I reckon the more often you come back to the topic by, I mean Chris has gone now, has he?
Chloe: Not till Friday. No, no, he's on his way. But there were other children that had that experience who, like Patrick, like he often goes back, like there's no reason why we couldn't go back to Patrick and

say, hey, do you remember when you were making that torch and you said your dad had a battery charger, what do you know? You know, you could do that couldn't you?
Barbara: Mmm, mmm.
Chloe: Like that sort of thing. Is that what you're talking about?
Barbara: Yeah, I am. I am. And asking him, what do you think a battery charger's for? And if you're going to choose between buying a battery that's rechargeable and one that isn't, you know, what's the difference? If you've got a battery charger you'd probably get rechargeable batteries. But what does it mean to use a battery charger instead of buying new batteries. And what's better for the environment ecologically? What's best.
Chloe: Mmm.
Barbara: Is it cheaper? Why do we recharge them? Why do we buy those ones? They're more expensive to buy in the first place. Um, all those sorts of, then getting into the social issues.
Chloe: Isn't that the good thing with having the dialogue now. Cos we can just look through and pick up an issue with a child.
Lauren: It's just remembering it though.
Chloe: But you do. Like cos I had that, like you may not because you didn't have that conversation. It might not mean as much to you.
Susan: I can still remember the conversations and the children that I had them from that other taping, the time before.
Chloe: Mmm, like you do remember.
Barbara: But, and do you think that by doing, recording it like this and remembering what they say, you'll start remembering without the tape? You know if, are you're picking up on children's ideas?
Susan: Yeah. Well we do now because that's how we do our incidence recordings. Like at the end of the day or at the end of the week we suddenly remember, oh that's right, that happened, we better write it. Cos we don't do it during sessions. So we are in that mode already.
Barbara: There's been some research done on teachers private talk, the things that go on inside your head, as a result of the messages that the teacher talk, the messages that you tell yourself. And how that changes as you develop different patterns and different ways of doing things. And so, I think that's what you said last time Chloe. That what goes on inside your head has changed quite a lot.
Chloe: Mmm.
Barbara: As a result of trying to think about what was said.
Susan: Yeah, it makes you think about what you're saying.
Chloe: But I think some of my styles have modified a little bit.
Lauren: And I had the Senior Tutor coming in to see me on Monday and she even said the way I talk to children and the things I was doing, she could relate it straight back to the theorists, like Reggio Emilio and Vygotsky and ...
Barbara: Yeah.
Lauren: Yeah, so I thought, oh. It must have ...
Barbara: Your philosophies in practice?
Lauren: Yeah.
Susan: Tell the students all this.
Chloe: You can, you can play them this. We'll tell them how clever we are. I think you should get Susan as a guest speaker and talk about it. Susan would be awesome down at College. She'd sort them out.
Barbara: Sort all those students out?
Chloe: You should see what she's like in that office, just on a Wednesday and Friday afternoon. Sort us out.
Susan: Stirrer.
Chloe: Susan'd be good down at College.
Barbara: I know. Yeah. Um, yeah, I had that book that I brought last time. You remember the three stories of the levels of thinking, but I mean it didn't seem to help you a lot. But I wonder if the to do, the to know and the to understand is going to be more useful. And whether we could start teasing out what they meant? This is on, if I could get you some readings on that. She writes very easy to read articles as well, they're not hugely theoretical. I like them.
Lauren: (Inaudible)
Chloe: Kaleb. Yeah, that's interesting because Mitchell and Stephanie have been playing with the hot rods over there.
Lauren: Oh, was that them? If I could listen to the tape again I'd know if it was their voice.
Barbara: Cos I couldn't, I did that last night quickly because my typist has been sick, so I sat down and did it. And I couldn't remember, could work out which child was which.

Lauren: I'd be able to pick it.
Chloe: See that's another project too.
Barbara: The fire and the hot rods. Yeah, I wouldn't know a thing about those.
Chloe: Yeah.
Barbara: I'd have to learn their language and get them to teach me as well. That's the other thing, isn't it?
Susan: Mmm.
Barbara: Is it, do you want ...? Go on.
Chloe: So with this here, so what we're going to look at is, um, the doing part of the project the what we know to extend the children, is it?
Barbara: Mmm.
Chloe: And then what level of understanding we think the children have got to? Or what level we want them to go to?
Barbara: Well, I think the doing is the practical things like, um, ...
Susan: It's the project, isn't it?
Barbara: Yeah, the project. And talking about it and making the links between what we did the other day and all those sorts of ... what do you, yeah and the knowing is what you know about it.
Susan: Like the research, isn't it?
Chloe: Is that like finding out stuff?
Susan: Yeah.
Chloe: That's when you go together and source information and talk about stuff to find out stuff.
Barbara: Yeah. And finding out what the children know.
Chloe: Yeah.
Barbara: What do the children know already? That's, cos they're doing it and you can assume that they know some things because you can see what they're doing but it's also thinking about, um, what else do they know, relates, partly relating as well.
Susan: So it's what the children know and then it's also making sure that we've got knowledge to extend their thinking. Is that it?
Barbara: Yeah.
Susan: Yeah.
Chloe: So that's something like, like with the making of the torch, for example, you'd say something like, so, what do you know about how a torch works?
Susan: Mmm.
Chloe: Just like that?
Barbara: Yeah. Tell me about what, yeah, exactly what you said. And, um, how it works and what it's for. I suppose that's getting into the understanding about the value of the torch.
Chloe: Yeah, that's understanding the value.
Barbara: And understanding about needing it when the sun goes down and getting into all those sorts of things about when you need to have a different source of light. Understanding the value of electricity. What, and playing mind games. Like, what if we never had electricity?
Lauren: See you could go into lots of different branches really.
Chloe: Yeah, that's what I'm just thinking. Like, you've got your project happening here and in it are all these side issues that come up as a result of the discussion.
Barbara: Mmm.
Chloe: Then these all become projects and when they're all happening these other things come up.
Lauren: Yeah.
Chloe: You know, these projects just ... I think I'm going to stop right now.
Susan: She's hypo enough already without making her more hypo.
Barbara: But it might take in all the kids, you know. All the children might be working and interested in different parts of it.
Chloe: Yeah. Oh boy.
Barbara: It's like I say. It's almost getting back to the old idea of having a theme in the kindergarten that all the children can relate to. And different aspects of it.
Lauren: But it's coming from them.
Barbara: Coming from them which is quite different from our old themes which came out of our heads.
Lauren: Mmm.
Barbara: Because that's what you have in mind that, um, how was it that did that ideas book, of all those bubbles? You know who I mean.
Chloe: Mmm.
Barbara: You know, the themes.

Susan: Oh yeah.
Barbara: You know, Wendy Lee.
Susan: Yeah.
Chloe: Yeah, Wendy Lee.
Barbara: Wendy Lee stuff.
Susan: Which is stored in the cupboard and never gets used.
Barbara: But it's that sort of stuff. It's that sort of ...
Susan: Yeah, it is.
Barbara: There might be, and it's that sort of thing she was on about. That if a child is interested in electricity, torches, camping. I mean you haven't even picked up the camping one really.
Chloe: No, no.
Barbara: It was just what else can we make? What other useful things because you were really interested in the shower, weren't you? And trying to extend that.
Chloe: Design and construction.
Barbara: And that went off. Do you intend to go into a torch?
Chloe: No.
Barbara: No. It was them that took you down the torch way. You were thinking what else? And someone said we could make a torch.
Chloe: Yeah.
Barbara: I'd love to have seen what else they thought about, you know, this thermal shower. There's one thing there the child's, one of the children said, um, oh you hang it in the sun. No you didn't, you hang it up for several days and nights and it gets hot and I had his vision of this nice, warm shower getting cold at night and getting hot the next day while the child's waiting for it to get hotter and hotter.
Chloe: So, they're understanding.
Barbara: That's exactly it. That's them understanding.
Chloe: That it takes several days for it to happen, not just overnight.
Barbara: That's right. And by knowing that, you could have challenged that and engaged with the child's mind. Hang on, is it going to get hotter? What if we have a cold night? Those sorts of engaging with. Engaging with the understanding.
Chloe: Yip.
Barbara: Just because you stay with the same ...
Chloe: And then it may have even stayed with the same project of the original shower instead of ...
Barbara: Maybe. Maybe that doesn't matter.
Chloe: No, it doesn't matter cos there were some, it was good fun.
Barbara: But by the few little things that they say, you can pick up what they are understanding.
Chloe: Yeah.
Barbara: And think how can I ...
Chloe: And that's what I want to get better at.
Barbara: ... how can I challenge that?
Chloe: That's where I want to improve. I want to pick up more on their cues, that they're giving me and go with it.
Susan: Mmm.
Chloe: And one of the things, it's always been a thing with me, is to allow the children to choose the direction of what's happening.
Barbara: Mmm.
Chloe: And not dominate with the outcome that I want to take place but to accept that the outcome that the child wants.
Barbara: But at the same time being a warm demander.
Chloe: Yeah, because that challenges them to ... yeah, I agree. But at the end of the day what I want for them isn't as important as what they want for themselves. That's ...
Barbara: I don't know that they know what they want for themselves.
Chloe: Mmm, but do you not think when a child sets out to do something that they have a certain outcome in mind, in some circumstances? No, I'm saying in some circumstances.
Lauren: Some children.
Chloe: Some children do.
Chloe: It talks about that play is meaningful even if it has no particular objective.
Barbara: Play can be meaningful even if it has no objective.
Susan: Play can be _____
Barbara: It can be meaningless.
Susan: Yes.

Barbara: And it can reinforce patterns that we don't want to reinforce. And you can make meaningful play even more meaningful.
Lauren: So it's moving on from like patterns and things.
Barbara: Mmm.
Susan: Engaging with wherever they're at and extending wherever they're at.
Lauren: Mmm.
Barbara: So it's finding out what's inside their heads. And the best thing, the best way is how you've started. Is getting them to talk.
Susan: Mmm.
Barbara: Are they doing a lot more talking than they have? Or you're listening to their talk more?
Susan: It's more like it, aye?
Chloe: It's a conscious effort.
Susan: To make themselves _____
Lauren: And I think like questioning techniques.
Barbara: Mmm. It's trying to find out what's inside those heads. Well, where do you want to go to from here? What's next? Do you want to stay with this project? Stay on the same topic with the children who might be still interested in it? And see where that takes you?
Chloe: Yeah, like, you know, just hearing that conversation we had before about the battery chargers and that side of it. Like there's no reason why I couldn't go back and pick it up with Patrick. And talk more about that with him and see what his ideas are and what he knows. What he wants to do with that.
Barbara: Mmm.
Chloe: There's no reason why. I'm quite happy to do that.
Barbara: Mmm.
Chloe: It's learning curve for me, or for us.
Barbara: And, yeah, finding out what he understands without you necessarily needing to understand it.
Chloe: No. And saying, well, hey, I didn't even know that, so great, thanks for that.
Susan: He's actually in my whanau group and he's actually one of those kids that needs to be drawn out. He's actually, I don't know him that well.
Chloe: And cos he's a constructor and a builder too. He's a hands-on, putting stuff together child.
Barbara: Mmm.
Susan: He's probably just busting for one of us to ... He hasn't been through a planning cycle, has he?
Barbara: That's where the next planning cycle children could come from.
Susan: Mmm.
Chloe: Mmm, got an interest discovered in dialogue.
Barbara: Yeah.
Chloe: Cos we are just choosing them random, aren't we? We just going down, oh yeah, oh yeah, let's do that one.
Susan: Yeah, there's no pattern to how we choose.
Chloe: We're not really choosing them with any reason so that's a good idea.
Barbara: Until they've all been through it.
Susan: Mmm.
Chloe: Yeah, that's a good idea.
Susan: Which they never will.
Barbara: Well, yeah.
Susan: There's always new children.
Barbara: But you might find that if two or three children are interested in the same project that you might get through two or three children in a whanau group.
Susan: Mmm.
Barbara: You might end up doing more than one.
Chloe: Well I mean Patrick and Caleb. You could do them both at the same time. I think really they're together the whole time.
Susan: Mmm.
Chloe: Basically. Even though their strengths may be in slightly different places, their interests are in the same place.
Susan: Mmm.
Barbara: And it'd be really interesting to see how you get in terms of depth of dialogue and their understanding by staying with the same topic.
Chloe: And whether I can get to being confident at this stage.
Barbara: Yes.
Chloe: Which isn't where I'm not quite at yet. So that would be good.

Lauren: Who's this with?
Susan: We were just talking about Patrick and saying how it could, like then we could involve Caitlin so you could do two or three in the planning cycle at once, instead of just doing one.
Chloe: Because Caitlin works so closely with Patrick she would benefit from anything we did for Patrick so why not include her in it as well?
Barbara: And choose the next child in the planning cycle out of an interest in the dialogue that you want to extend in the project instead of ...
Chloe: It's exciting, isn't it?
Susan: See I talking to Cameron, that was pure fluke. But it was Cameron and Filoaki in that last taping I did. And they're both in my group.
Chloe: Mmm.
Lauren: Can double-up.
Barbara: Well, I, um, this back again..
Susan: I would have gone, oh. Cos we were thinking of getting one for here, weren't we? There surely must be a smaller, cheaper version that you can get.
Susan: Yeah. And are we going to get a lot of use out of it over the next two weeks?
Chloe: No, not over the next two weeks.
Susan: I think I'd just rather start fresh next term.
Barbara: Leave it, leave it for now.
Susan: Give it back to him so he knows that he's got it.
Barbara: Yeah, okay.
Susan: And just see if we can get it at the start of the next term.
Barbara: I thought you might have wanted to carry on with the, following up with the stuff that the kids are already interested in? I suppose you can pick it up anytime?
Susan: Yeah, we can pick that up anytime. And actually, like, we're not going to, anything that we pick up we're not going to be able to follow through too much. Because we're going to have the holidays stuck in the middle. And then because you know how it was last time when you came and taped and we had the holidays. Thomas had totally changed.
Barbara: Yes.
Susan: Which means the time, that bit of the planning cycle and the next bit. It didn't matter but, yeah.
Barbara: Okay.
Susan: I think we're better to start fresh and we're fresher. More focused.
Barbara: Meanwhile would you, you keep records anyway of what you do, if anything happens as a result of any project, any exciting things happen let me know. Um, yeah, just jot them down. So what do you want, when do you want to meet again? Do you, you obviously want to leave it till next term.
Susan: Yeah.
Barbara: I don't even know when my holiday, I'm going to take a week off before Christmas, Easter, if I can.
Susan: Well, we finish at Easter.
Barbara: Yeah.
Susan: Yeah, two weeks.
Barbara: You've got a second year student here I need to come and see sometime.
Susan: Oh yeah, that's Cas.
Barbara: That's Cas. I'll try and come and see her, they're coming out next week, aren't they?
Susan: Yeah.
Barbara: So I'll probably come out and see her at the end of next week. Do my visiting at the end of next week.
Susan: Mmm.
Barbara: And, um, so if you've got anything to tell me then, I'll catch up with you then.
Susan: Yeah, that's good.
Barbara: And what? Leave it till next term?
Susan: Yeah, leave it.
Chloe: Third week back.
Susan: The third week in.
Barbara: Got a date?
Susan: We come back on the 27th.
Barbara: April. When's Easter?
Chloe: It's so important keeping stickies, aye?
Susan: Mmm.
Barbara: You've got all those records you can go back and ...

Chloe: Yeah.
Barbara: You'll have so many anecdotal things that a project could grow out of.
Susan: Yeah.
Chloe: But I did feel really positive with what had happened on that day.
Barbara: Oh, I'm not surprised. So you should.
Chloe: And it wasn't really just a conjure-up for the benefit of the tape. Like I, if I hadn't had the microphone on I don't think I would have done that much different.
Barbara: Mmm.
Chloe: I was probably a little bit more careful with my terminology.
Barbara: And Susan left you alone because you had the tape on.
Chloe: Yeah and I had more opportunities, the time with those children. But I wasn't with just one child, I was with about a group of six or seven.
Barbara: Do you, it would be the 5th of May?
Susan: No, we come back on the 27th of April.
Barbara: On the Monday, the 27th of April.
Susan: Yeah.
Barbara: Okay. What's the next step though? Is the next step you having time to record something with a group starting ...?
Susan: We'll be starting a monthly planning cycle right from the first week.
Barbara: You won't have done, you'll be doing your observing that week?
Susan: Yeah, yeah.
Lauren: We'll be choosing our child.
Barbara: Choosing the children and observing.
Lauren: Would be a good time to be taping, wouldn't it? Would it?
Chloe: Yes, the first week.
Barbara: So if you can have this back on the, okay, so. If I've got my own then I can leave it here. If I manage to buy it or if it's cheap enough you can buy it yourselves. Cos it seems to me you're going to want to buy your own eventually.
Susan: Yeah, I've just written that down.
Barbara: So maybe I might _____
Chloe: It's the wireless microphone system, that's what we want.
Barbara: Wireless microphone, yeah.
Barbara: And so, so what will you do then? Will each of you have a child and will you see if maybe you develop ....
Susan: Look at a group. We could trial that, couldn't we? Like try and find three children that are in similar groups.
Lauren: Does it matter if they're not in the same whanau group?
Chloe: I mean you could choose Patrick and I could choose Caitlin.
Lauren: Who else mixes with them?
Susan: Anybody really.
Chloe: Yeah.
Susan: Yeah, we could look at that.
Chloe: Mmm.
Barbara: And just have it here and tape what you can when anything significant comes up.
Susan: And even look at projects and, draw plans, execution related to it.
Chloe: Yeah, that's something I like.
Barbara: That's easy. This side of the holidays talking about that. By then you know you'll be fresh.
Susan: Yeah.
Barbara: Yeah.
Susan: And we could really get into it, couldn't we?
Chloe: Mmm.
Susan: Do a Reggio Emilia at Manuka.
Lauren: We could. We could be the Reggio Emilia kindergarten.
Barbara: No, you'd be the Manuka Kindergarten that are doing these really neat things and everyone would come from all over the world to see the Manuka system.
Chloe: And our own philosophy.
Lauren: We could. We could publish our own teaching philosophy.
Barbara: Well, I hope to be writing, I hope to be writing articles. And I'm telling your story so it has to be, you have to be, you're going to have to be co-authors as well. So, um, yeah. Well shall I quickly, it's quarter to five, shall I quickly go through what I'm going to be talking about on Monday.

Susan: Yeah, that would be good.

...

Susan: Because we're using more we're getting it right in our heads and so we're more open with the parents.

Barbara: That's what ...

Susan: And then the follow-up to that is that parents understand more about what we're doing so they become more involved.

Barbara: Yes.

Susan: All the work we did with Joy M. last year about _____

Barbara: Yes, and they're getting involved and children are getting it from home as well as from here. Yeah.

Susan: Parents are saying, oh, they're doing schema at home. And you're thinking oh,

Barbara: I think that all that schema work, we haven't talked much about schema at all. talked much about schema at all when I've been with you but I, in a way, I think schema can be used as a way of finding what the children are interested in and providing better equipment for them as well to extend them and it's not, and unless you also use schema as a way of understanding what children are thinking and get inside and engaging with their minds. If they're used like that they can be an adjunct to this as well. But I think even schema can be another, be just another way of providing better equipment for them.

Susan: Mmm.

Chloe: Cos I find it quite difficult to get in tune with the schema of all these children.

Lauren: Mmm.

Chloe: And like sometimes I'll say, hey Susan, look over there. Now I think that's such and such and that's just me learning and getting some reinforcement from my peers but I find at home with my son, I know what his schema is, cos it just stands out and I actually use it to help him make sense of his world in the wider realm. Like, cos he's in that connection schema. Like he connects everything, you know, like he'd have everything in a row here like this and he's into trains and things that connect and water and moving things along. And even when it comes to talking with him, I connect his day for him. He really loves it. He goes in the morning, he wakes up and he goes, okay, okay, gonna get up, and then I have to spin out the rest of the day. I have to spin out that we're going to get dressed and we're going to have breakfast, we'll go to Nanna's. If I connect his whole day up for him he's as happy as Larry. And that's his schema, working not only in a physical way but in a dialogue way as well. He really loves it.

APPENDIX D4

ITEMS IDENTIFIED IN EACH CENTRE BY PROPOSITIONS

SUMMARY OF 4 CASE STUDY CENTRES AND OUTCOMES OF THEIR ACTION RESEARCH PROGRAMMES

The following interactions were identified as contributing to teachers' scaffolding and co-constructing interactions

Summary in the four case study centres of examples of proposition one: Teachers co-constructing learning with children use many interaction skills, of which some are in common and others are different from those of scaffolding learning for children.

	Manuka Large state kindergarten; 3 teachers; 2 regular groups of 45 children, 3-4 and 4-5.	Kauri Small Christian-based private kindergarten; 2 teachers and part-time administrative assistant.. Frequently changing group of 20 children , 3-5 years old	Terrace Large community childcare centre. 50 children, 2-5 years old in one frequently changing group.	Haven Small private childcare centre.2 teachers (includes owner/manager) with part-time assistance. 20 3-5 year old children, frequently changing.
Developing trusting and reciprocal relationships (in common with scaffolding and with co-construction).	Learn about the children's interests through talking with them, and through excellent relationships with parents. Attending to children's talk, supporting them in verbalising ideas and following interests through to action.	With a Christian base, focuses on caring interactions between all participants, addressed especially during group times. Teachers know the parents and families well, often including weekend activities.	Project teacher has long record at this centre; knows children and their older siblings well. Makes frequent links between home and centre.	*Knowing the children and their families really well.* *Verbalising children's activities in support of their learning* *Respectfully checking that a child would like the offered assistance* *Making frequent links between home and centre.* Learning at home following that at the centre.
Scaffolding children's learning	Supporting **children's** problem-solving and experimentation, without sharing their own thinking with children. Providing feedback on cognitive skills Identify children's schema.	Supporting the child's problem-solving and experimentation. Telling children specific knowledge facts, in the context of their interests. Providing feedback on cognitive skills	Teaching of specific knowledge in teacher-directed activities	Supporting the child's problem-solving and experimentation. Providing feedback on cognitive skills Reciprocal responding

Co-constructing learning with children. Note: these are in many cases the same skills of co-constructing learning that are further identified under proposition 3.	Problem-solving and experimenting **with** children, with no specific knowledge outcome in mind. Sharing **own** ideas and experiences with children and learning from them on topics in which they have more expertise. Developing shared meaning/ intersubjectivity Entering children's fantasy play. Focusing on the skills of really hearing what the children are saying through: - recording dialogues - becoming aware of how different children process information. -picking up on their ideas -exploring ideas in-depth -revisiting children's ideas to extend them, often within projects involving many children -being aware of their interests -not thinking for them or interrupting -feeling comfortable with silences -following children's lead rather than getting them to follow our agenda involving children in small-group learning engaging in authentic activities with children.	Making links across activity settings (home and centre), especially through discussions with parents. Developing shared meaning/ intersubjectivity Listening to children's ideas - valuing children's voices. Excited about children's interests, and knowing children really well. - recording dialogues -picking up on children's ideas -exploring ideas in-depth -revisiting children's ideas to extend them, often within projects involving many children -being aware of their interests -not thinking for them or interrupting -feeling comfortable with silences -following children's lead rather than getting them to follow our agenda keen to contribute from own knowledge base to children's understandings involving children in small-group learning. engaging in authentic activities with children.	Making links across activity settings (home and centre), especially through discussions with parents. One teacher realised that she had been "talking too much and doing all the thinking" and gained skills in changing this: - developed shared meaning with children used her knowledge of the children's home backgrounds to extend their thinking during map-drawing encouraged children in peer learning made links between home and centre, and across all activity settings organised trips related to topics of children's interests (to grocery shop; mail centre; street walk, to look at letter boxes). Remained with focus children's topic as long as the interest remained, in authentic activities.	*Working with their community of learners.* *Checking the child's meaning and sharing own.* *Entering the child's fantasy play.* *Problem-solving and experimenting with children.* *Encouraging children to work with each other.* *Talking with children about their thinking; exploring children's thinking with them.* *Making links between many sources of ideas, across activity settings.* *Making links between current and previous activities* *Checking and co-constructing meanings.* Discovering children's meanings. Value children's expertise. Children do their own thinking and are in control of their own learning. Organised trips related to topic of children's interests. Remained with and returned to topics of children's interest, contingently on their interests levels. *Involving children in small-group learning.* *engaging in authentic activities with children.*

Proposition two: Teachers co-constructing learning with children develop many recording and planning processes in support of their interaction skills.

Proposition questions: What processes do the case study centres use to support their co-construction of learning with children? What research do teachers engage in to support children's topics of interest?

Note: I am not claiming that these structures are outcomes of the research programme; many were in place prior to the commencement of this project. (Changes made within the project are addressed under proposition four, below.)

	Manuka	Kauri	Terrace	Haven
Clearly established planning processes	45 children allocated to whanau groups with a regular teacher Collaborative planning for focus children with co-construction of learning an intentional outcome Maintenance of a profile of each child, with photos and other documentation frequently referred to by children and parents in planning, and in daily centre activities. Getting to know what the children think whether or not they were currently a focus of planning. Transcription and analysis of teacher-child dialogues and developing projects. Planning for projects involving small groups of children, based on interests, and often displaying resultant project work. Revisiting children's ideas Learning when, and how much dialogue to record. Researching topics of children's interest Realising the importance of children learning from and with each other.	Theme planning, some with biblical base, others based on children's interests, for whole group. 2 teachers each take major responsibility for planning for a focus child, in collaboration with each other. Several projects engaged in at any time. Results displayed on walls. Recording of dialogues a key to identifying and extending children's interests (developed during PD). Collaborative dialogue amongst professionals, including journal reviewer. Photos and other documentation of projects frequently referred to by children. Teachers keen to contribute own knowledge with the children - at times scaffolding, increasingly as co-construction of learning. The small size of the group makes mat-time sharing of ideas meaningful.	Whanau and roopu groupings, with individual teacher planning for focus children. Special activities planned for roopu times. Theme plans for whole group. Large team size makes it difficult for teachers to collaborate in planning. Teacher in project developed an ongoing project with children; researcher recorded dialogues and displayed outcomes in book form.	Systematically recording children's dialogues using hand held dictaphones, at specific times for children in the centre (on the child's first day; when the focus child for planning; when interesting activity is taking place); Organised for recording (with tapes ready; dictaphones in strategic places around the centre). Use of children's profiles, including photos and art work, in planning, and in daily centre activities Developing projects and mini-projects with children as a framework for documentation, discussion, and decision-making in support of extending children's learning ever wider and deeper. Revisiting ideas. The small size of the group makes mat-time sharing of ideas meaningful.

Researching topics of children's interests	Analysing dialogues with children Use of the computer encyclopaedia as a research tool, with children and with parents. Frequent trips to the library, with and without the children.	Spending time out of hours researching in library and on computer, for knowledge and resources	Seeks experiences outside centre to reinforce children's current interests (Burger Buggy trips popular). Trips with small groups feasible and frequent, because centre owns their own van for transport..	Analysing dialogues with children Use of the computer encyclopaedia as a research tool, with children and with parents. Frequent trips to the library, with and without the children. Use of NZCF documents in planning. Applied learning from conferences.
Collaboration with children	Share their interests with children; researched topics together. Identify children's interests with them, and work to extend these. Children learning in small groups, through projects.	Share their interests with children; researched topics together. Identify children's interests with them, and work to extend these. Co-constructed learning with children as well as teaching specific facts, in context.	Discussion during roopu Development of group projects with facilitated support.	Share their interests with children; researched topics together. Identify children's interests with them, and work to extend these.
Collaboration with other teachers:	A trusting, open relationships between all three teachers. Frequent challenges between teachers, also much support. Collaborative observing, planning and implementing Communication during the session - developed hand signals to let each know when they were engaged in special dialogue that they did not wanted interrupted.	A trusting, open relationships between both teachers and the administrative support person. Teachers very open to new ideas and to change, based on current theory. Ongoing higher level qualifications drive, sharing current theory with each other. Compared previous scaffolding with current co-construction; building on previous understandings. (co-construction across time and institutions). Collaboration included reference to written texts and to article reviewer. University student included in collaboration in planning.	Working in a difficult environment during the time of this research. A large team struggling to communicate. Individual teacher planning for focus children.	A trusting, open relationships between both teachers and part-time staff. Annually set long term common goals, individually and for the group. Collaborative goal-setting.
Collaboration with parents	Involving parents in greater participation in the programme; also assisting with tape transcription. Parents also had the opportunity to reflect on the centre's changed processes.	Parents often contribute "items" to the programme eg "jam sessions"; visiting parrot. Supported children's learning through sharing photos of activities with their parents. Planning included parents' interests (weddings Centre activities carried through at home, then discussed at the centre.	Know the families well because of age of centre and loyalty of families - almost 2nd generational.	Teachers really value the contribution of the parents to their programme - links between home and centre strong in terms of children's learning across activity settings. Involve the community in review.

Administrative support for planning.	Allocated time each week for maintaining records Staff meetings during paid hours. Provision of tape recorders and expendable materials.	Support from the centre community for special nature of the programme (annual events in which the children participate); also during difficult times at the centre. Community support for requested new equipment to support children's learning.	Regular paid general meeting times, for whole staff team.	Allocated time each week for maintaining records Staff meetings during paid hours. Provision of tape recorders and expendable materials.

Proposition three:
Facilitator-teacher co-construction of research (action research) is effective professional development; with such critical reflection a change in philosophy can either lead or follow a change in interactions with children.
Proposition questions: What changed for teachers as the result of their collaborative PD? What did action research identify as the most useful processes in supporting their learning to co-construct with children?

	Manuka	Kauri	Terrace	Haven
Development of interactive skills with children	Learning to listen to children's thinking, focusing on the skills of really hearing what the children are saying through: - recording dialogues - becoming aware of how different children process information. -picking up on their ideas -exploring ideas in-depth -revisiting children's ideas to extend them, often within projects involving many children -being aware of their interests -not thinking for them or interrupting -feeling comfortable with silences -following children's lead rather than getting them to follow our agenda	Learned to listen to children's ideas - valued children's voices. Excited about children's interests, and knowing children really well. - recording dialogues -picking up on children's ideas -exploring ideas in-depth -revisiting children's ideas to extend them, often within projects involving many children -being aware of their interests -not thinking for them or interrupting	One teacher realised that she had been "talking too much and doing all the thinking" and gained skills in changing this: - developed shared meaning with children - used her knowledge of the children's home backgrounds to extend their thinking during map-drawing - encouraged children in peer learning - made links between home and centre, and across all activity settings - organised trips related to topics of children's interests (to grocery shop; mail centre; street walk, to look	Discovering children's meanings; now know more of what the children know and understand. Value children's expertise. Children have been empowered to do their own thinking and to be in control of their own learning. Organised trips related to topic of children's interests. Remained with and returned to topics of children's interest, contingently on their interests levels. Involving children in small-group learning

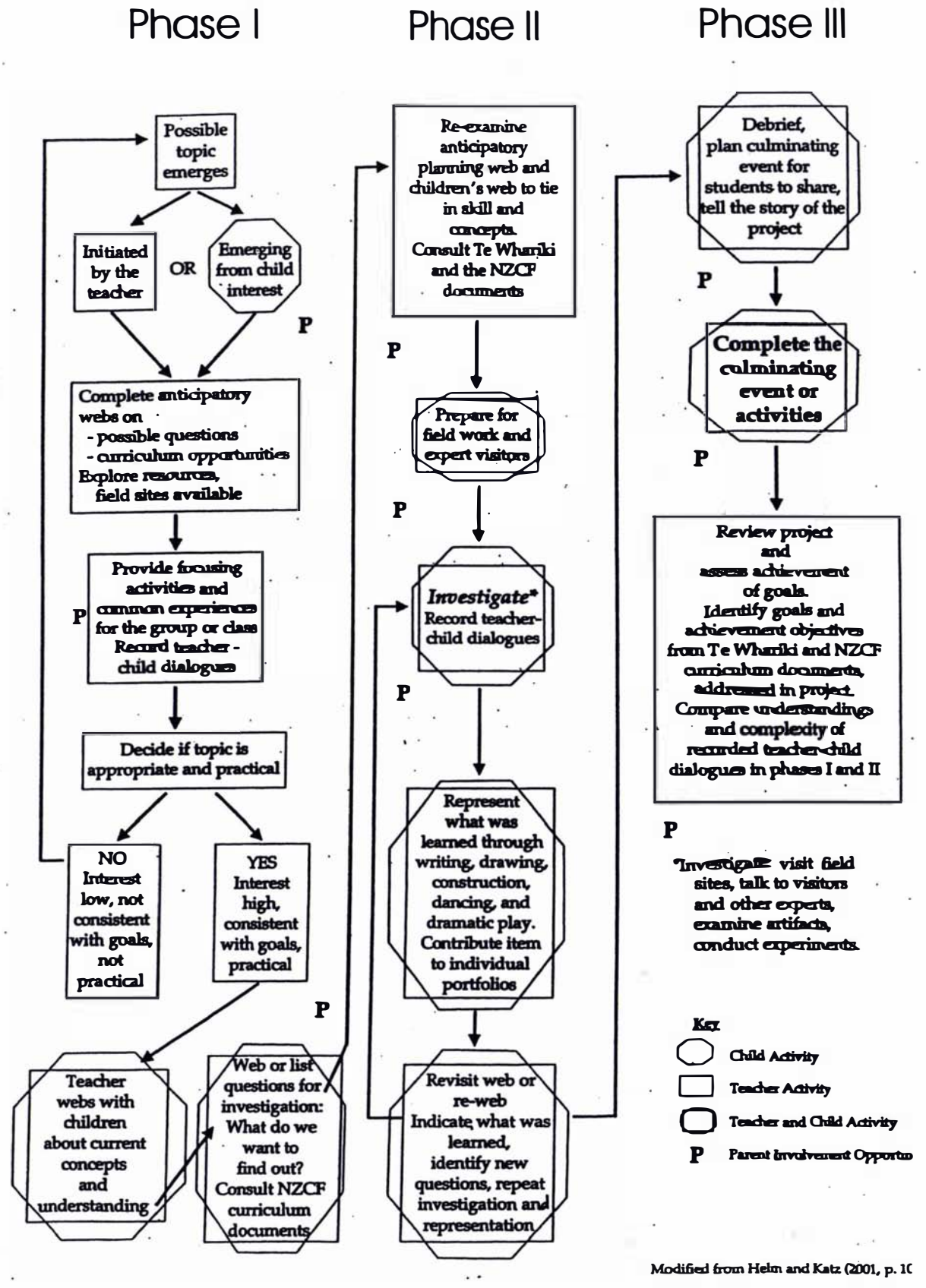
	• involving children in small-group learning	-feeling comfortable with silences -following children's lead rather than getting them to follow our agenda • keen to contribute from own knowledge base to children's understandings - involving children in small-group learning -	at letter boxes). • Remained with focus children's topic as long as the interest remained.	
Development of processes in support of co-construction of learning.	Greater focus on learning outcomes for children. Displaying project work as an important aspect of documentation and ongoing learning (allows children to re-cognise their understanding of ideas) Reinforced planning based on children's interests and strengths Using children's portfolios as a daily reference tool with the children, as well as the basis of long term planning Doing a lot of work in their own time and contracting to spend time as a team on a regular basis out of hours to catch up on videos, transcripts etc.	Utilised audio tapes to record and transcribe dialogues with children. Researched topics of children's interest. Displayed children's project work publicly, frequently encouraging children to revisit previous thinking. Researched topics of children's interest, in libraries and via the computer - out of hours as well as with the children. Utilised still copies of video recordings of focus children, in co-constructing learning. Developed skills in "mind mapping" or "webbing" of ideas for extension activities and potential projects.	The "roving roopu" teacher scheme was abandoned, allowing each roopu teacher to focus on developing relationships with and programmes for their own small group of children.	Doing more video and audio recording of children's work, for analysis and planning purposes. Have well developed systems for the management of taping. Identifying and developing the transfer of skills across activity settings. Photos of children's work taken at specific times, for every child. Observations more detailed. Planning to extend children's ideas is based on their identified interests and thinking. Planned learning outcomes changed from knowledge base to higher thinking processes. Planning for focus children "hits the nail on the head" more frequently. Teachers research topics of children's interest - they learned that it is "never too late to go back to children" with previous ideas to extend them.

Development of collaboration	Involving parents (and their interests) to a much greater extent in working with the children Parents/Whanau are now much more involved in the programme and are as excited as we are about learning outcomes for children. Use of the computer with children and parents to extend topics of interest Working together as a team to become familiar with new ways of teaching: constantly evaluating, challenging ideas so that we can all learn together, supporting each other in developing the skills in conversation techniques and using new technology. We as professionals are much more aware of our questioning techniques - it is a form of self and peer appraisal listening to each others transcripts or seeing how we work with children on video. We are now much more 'in tune' with each other's teaching styles and respect the different strengths we have to offer the team. The team collaborated with their community of peers, through their writing of a research journal article, and through presenting their work at several peer meetings.	Criticism of ERO a strong motivator in evaluating practises; administration and parent groups strongly supportive of teaching team. Willingness to work together to manage change, when convinced of the value in this. Critique of journal article reviewer utilised in research project to analyse interactions. Shared children's learning across activity settings with parents	The project teacher informs parents of the focus child's centre interests, seeking input from the home environment. Many teachers in the centre were drawn into the activities planned for the extending project. Researcher-teacher collaboration a major factor in documentation of ongoing project developed by the one teacher. A major upheaval in the teaching and management team towards the end of this research programme has led to the possibility and interest in further developing collaborative planning.	Teachers have more discussion with parents about children's life experiences away from the centre. Parents make written and taped observations at home to contribute to the planning cycle. Teachers are committed to working outside of hours, both individually and together, to maintain records and planing systems. Tools to "get inside children's heads" include asking children to demonstrate their knowledge to other children, and listening to tapes in which children are "acting out their thinking".

Change in philosophy	Change from a Piagetian to a Vygotskian approach to interacting with children Being empowered through the knowledge and application of theory to practice Identification of the barriers to having conversations with children (as identified by Cadwell and Fyfe, 1997) in order to overcome them Change from provision of equipment and materials to a focus on dialogue and developing projects with the children. The writing of learning outcomes changes considerably, from a focus on the provision of equipment to extending their understandings. Realised that planning for focus children facilitates learning for many children in the group.	Integrated understanding from a variety of sources (professional development with researcher, pursuit of higher qualifications, feedback from ERO) to modify ways of interacting with children. Developed appreciation of the limits of scaffolding as a metaphor for children's learning, and embraced that of co-construction. Excited to be embracing current theory in their practises. Debated meanings and differences between scaffolding and co-construction, through degree studies.	One teacher experienced the real differences between outcomes for children when engaging in teacher-directed activities (scaffolding) as compared with co-constructed learning; changed from a stance of inquisition to one of co-construction. Change for this centre as the direct outcome of this research programme was minimal; however, following a major subsequent staffing change the ideas of co-construction of learning were revisited as one aspect of centre reorganisation.	Teachers acknowledge the value of developing their own understandings of theory, and of researching topics of interest to the children. An enhanced understanding of the differences between Piagetian and Vygotskyan-based programmes.
Useful action research processes.	Analysing teacher-child dialogues. Engagement in reflective dialogue. Excitement with PD. Relating theory to practice. Articulating action research outcomes with peers.	Analysing teacher-child dialogues. Relating theory to practice.	Analysing teacher-child dialogues. Reflection on practices and processes in whole team.	Analysing teacher-child dialogues. Updating theory and relating to practices.

APPENDIX D5

PROJECT PHASES ADAPTED TO THE NEW ZEALAND CONTEXT



Modified from Helm and Katz (2001, p. 1(

APPENDIX D6

EXAMPLES OF ADAPTED RESEARCH STRUCTURES (BRIEFLY) CONSIDERED BY CENTRE TEAMS

- Tough (1976) *Listening to children talking.* London: Ward Lock Educational.

- Bloom, Englehart, Furst, Hill, & Krathwohl, (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: The cognitive domain.* White Plains, NY: Longman.

Classification of the uses of language with examples, based on Joan Tough's(1976)* work

USES OF LANGUAGE AND STRATEGIES	EXAMPLE IN PRESENT, PAST OR INAGINED CONTEXTS	EXAMPLES OF ADULT'S INTERACTION (prior, during, or after the event)
1. Self-maintaining		
1. Referring to physical and psychological needs and wants	"Watch me, watch what I can do."	"How are you feeling about?"
2. Protection of the self and self interests	"I don't like it!"; "Be careful of my boat. You're waggling the table".	"Tell – what you are thinking/feeling"
3. Justifying behaviour or claims	"I can have it because I asked first."	"How could we solve this so you are both OK?"
4. Criticising others	"She threw the ball too hard and now its lost."	"What do you think needs to happen now?"
5. Threatening others	"If you don't give me that car I will hit you."	"Is there another way you could get your message across?"
2. Directing		
1. Monitoring own actions	"Turning it around, the truck is going around."	"Tell me what's happening here. What's going on?"
2. Directing the actions of the self	"Turn it-it's hard – turn it a bit more. Now the wheel – careful it should fit – that's it."	"How are you solving this problem?"
3. Directing the actions of others	"Get up". "Be still".	
4. Collaborating in action with others	"You pull the handle while I try doing this here."	"Can you think how you might solve this problem together?"
3. Reporting		
1. Labelling the components of the scene	"That's a car and that's a bus and that's a yellow truck."	"Tell me about this picture. What can you see?"
2. Referring to detail (size, colour, and other attributes)	"(It's) a switch". "Wings". "Propellers".	"What do you notice about this...?"
3. Referring to incidents	"They husband and wife now. (He put the veil) over her face and then put it over her head and then he kissed her..."	"Tell me what happened."
4. Referring to the sequence of events	"My Mummy's getting married and then we will move out"	"What do you think will happen."
5. Making comparisons	"Its different".	"What do you reckon?"
6. Recognising related aspects	"They're the same."	"What are you noticing?"
7. Making an analysis using several of the features above	"...and then he kissed her and it was very funny"	"What do you think of that?"
8. Extracting and recognising the central meaning	"He's just a puppet, eh?"	"What do you think about that?"
9. Reflecting on the meaning of experiences, including own feelings	"I like staying with my Aunty but I like coming home too."	"How was it, for you?"

4. Towards logical reasoning		
1. Explaining a process	(The fan) "cools you down". (It works with) batteries".	"How do you think this works?"
2. Recognising causal and dependent relationships	"Why did you get married?" "Its got this and this and that to turn it on".	"Why do you think people get married?"
3. Recognising problems and their solutions	"It needs batteries and its nearly runned out so it might not be very much wind. It might need some new batteries."	"What do you think we could do?"
4. Justifying judgements and actions	"I can't see everyone for the photo. You will have to move over and look at me."	"Do you hear what the photographer is saying? What do you need to do for a photo?"
5. Reflecting on events and drawing possible conclusions	"We went to the beach at the weekend but it was not much fun because it rained all the time."	"What are some of the things your family does for fun when it is raining?"
6. Predicting consequences of actions or events	"I think the boat sank, because it is joined here. I will put this plastic on and see if it floats."	"Do you have any ideas about why...?"
5. Predicting		
1. Anticipating and forecasting	"Then they move out". "In a few years when I'm going to be five...."	"What will happen when...?
2. Anticipating the details of actions and events	"I'm going to make some scones and I'll put some chocolate chips in them."	"What else do you need for....?"
3. Anticipating a sequence of events	"When I go to Andrew's and Nathan's I go up the footpath and I be very careful and I looked both ways."	"What must you always do to keep yourself safe?"
4. Anticipating problems and possible solutions	"I need to nail something on the bottom here, but then it might be too heavy to float."	"How will you find out?" "How could you test your ideas?"
5. Anticipating and recognising alternative courses of action	"We could all use our spades, but my Dad has got a bulldozer and that would be real quick."	"Can you think of any problems using the bulldozer here?"
6. Anticipating consequences of actions or events	"The paper windmills are not so good because they will crumble when it rains."	"Which one do you reckon will work best?"
6. Projecting		
1. Projecting into the experience of others	"He dives under the sea and it's a bit scary - there's sharks and caves."	"What do you think its like to be a diver?"
2. Projecting into feelings of others	"I don't like and I know they don't like it either. It hurts."	"How do you think -- feels when you push?"
3. Projecting into reactions of others	"If we take all the blocks away, he will come and get them back."	"Would that be fair, do you think?"
4. Projecting into situation never experienced	"If we were in the rocket for a long time it would be stuffy and boring."	"I wonder what it would be like?"
5. Projecting into own thinking	"My brain thought about it and then put it into my mouth."	"Where did that good thinking come from?"
7. Imagining	Examples of dramatic play	

Tough, J. (1976). Listening to children talking. London: Ward Lock Educational.

Classification of the uses of language with examples from 25.2.99 transcript

USES OF LANGUAGE AND STRATEGIES	EXAMPLE IN PRESENT, PAST OR INAGINED CONTEXTS	THE ADULT' THE CHILD'S
1. Self-maintaining		
1. Referring to physical and psychological needs and wants		
2. Protection of the self and self interests	"I don't like it!"; "Be careful of my boat. You're waggling the table".	
3. Jusitifying behaviour or claims		
4. Criticising others		
5. Threatening others		
2. Directing		
1. Monitoring own actions		
2. Directing the actions of the self		
3. Directing the actions of others	"Get up". "Be still".	
4. Collaborating in action with others		
3. Reporting		
1. Labelling the components of the scene		
2. Referring to detail (size, colour, and other attributes)	"(It's)a switch". "Wings". "Propellers".	
3. Referring to incidents	They husband and wife now... over her face and then put it over her head and then he kissed her and it was very funny	
4. Referring to the sequence of events		
5. Making comparisons	"Its different".	
6. Recognising related aspects		
7. Making an analysis using several of the features above	They husband and wife now... over her face and then put it over her head and then he kissed her and it was very funny	
8. Extracting and recognising the central meaning	"He's just a puppet, eh?"	
9. Reflecting on the meaning of experiences, including own feelings		
4. Towards logical reasoning		
1. Explaining a process	(My Mummy's getting married) and we might move out" (The fan) "cools you down". (It works with) batteries".	
2. Recognising causal and dependent relationships	"Why did you get married?" "Its got this and this and that to turn it on". It needs batteries and its nearly runned out so it might not be very much wind.	
3. Recognising problems and their solutions		
4. Justifying judgements and actions		

5. Reflecting on events and drawing possible conclusions 6. Predicting consequences of actions or events	
5. Predicting 1. Anticipating and forecasting 2. Anticipating the details of actions and events 3. Anticipating a sequence of events 4. Anticipating problems and possible solutions	Then they move out. "In a few years when I'm going to be five...". When I go to Andrew's and Nathan's I go up the footpath and I be very careful and I looked both ways and if I see a car coming I just wait
5. Anticipating and recognising alternative courses of action	
6. Anticipating consequences of actions or events	
6. Projecting **1. Projecting into the experience of others** **2. Projecting into feelings of others** **3. Projecting into reactions of others** **4. Projecting into situation never experienced**	
7. Imaginaing	

Adaptation of Bloom's Taxonomy to Early Childhood Thinking Skills Related to specific example of "The Wedding", initiated by children at Kindergarten.

Type of thinking involved	Questions specific to the wedding	Other questions
Knowledge: (focus on memory) • recall bits of information • know names, shapes, colours, other attributes • know time, facts about people, places, events • knows ways of doing things, conventions and expectations • understands continuity, directions, sequences • knows classifications and categories • knows how to do things, how things work	What happens before, during, after the wedding? Who goes? What do they do? (keeping in mind that the wedding might be up a river; between the same sex; between people with children already; reconstituted marriages; etc)	What do you know about? What do you want to find out? What did you find out? What can you see here? Tell me about...
Comprehension (understanding how to deal with problems and materials) • understanding communication • interprets ideas into own situation deals with effects, conclusions and predictions	Why do people get married? What happens if you don't get married? How long is marriage for? Who benefits?	Tell me about.. What do you reckon? How would you. .? And then what would happen?
Application: (the use of ideas in practice) • applying ideas to a practical situation	Here is where all the drama, the activity of a centre is happening. The questions will mostly be asked during activity, or when interacting with books, photos, about the topic – or at mat time.	
Analysis: (breaking communication into constituent parts in order to clarify ideas) • identifying the elements in a communication • making connections and relationships between the elements • metacognition – where did my thinking come from?	How do you know people love each other? What does it mean to be in love? What do people do to show they love you? How do you learn how to love?	What else do you need to know/get? Do you need anything else to make it work? Where did that idea come from?
Synthesis: (putting elements and parts together to form a whole) • recognising patterns and structures • producing a unique communication or plan	Drawing plans, diagrammes, paintings, pictures	What goes together, here? How come this is happening? How might it look if you did it for yourself?
Evaluation: (judgements about the value of material or method)	"I think.." Is it good to be married? Why do people get married? Is marriage always good? When husband and wife have conflict, what happens? What is good about conflict? (Wow!!) need to know the kids, here.	"What do you think its like to be a –?" Why do you think they do that? Does it have to be this way? Is this a good thing to do? Can you think of a better way?